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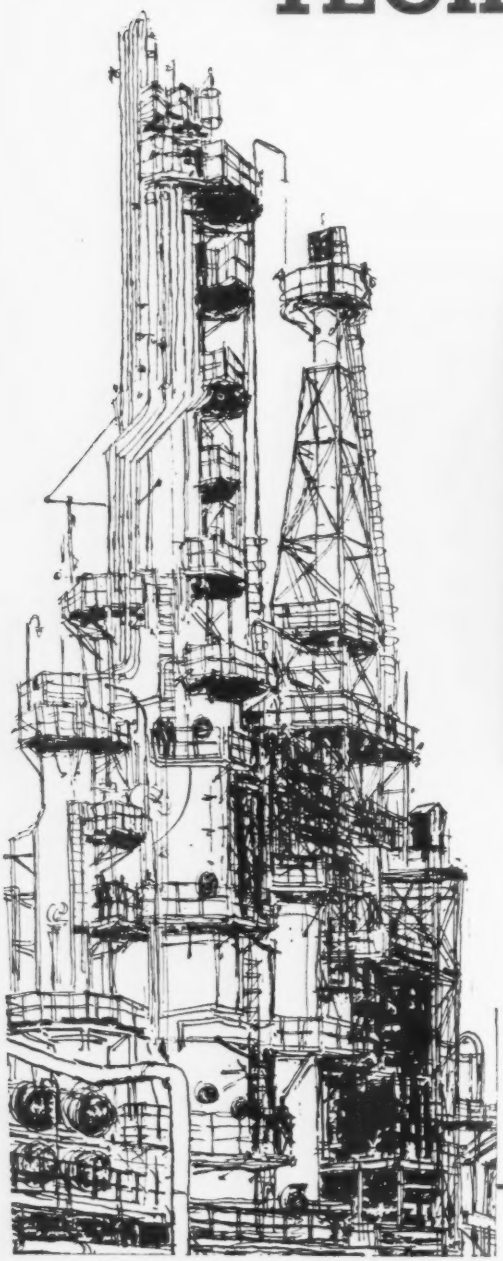

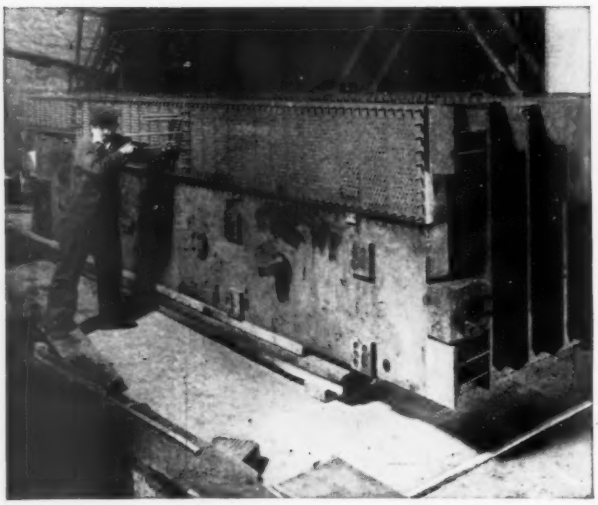

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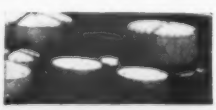

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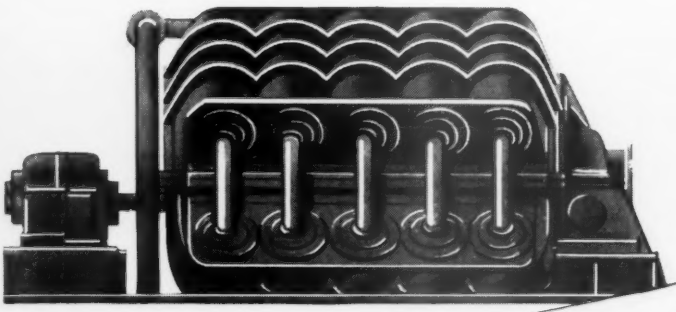

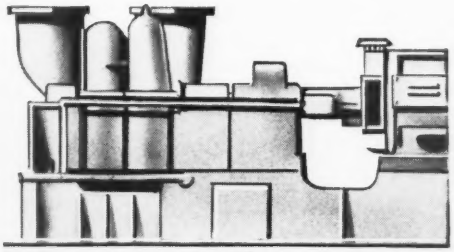

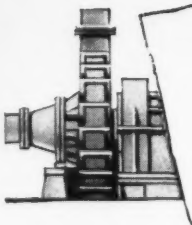

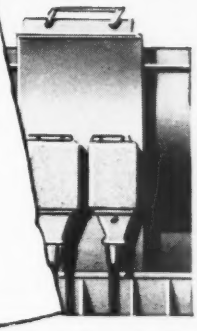

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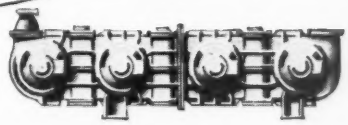

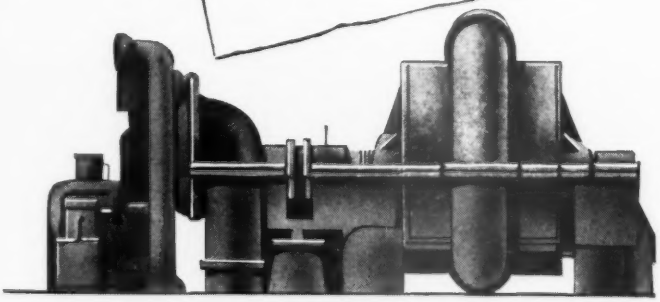

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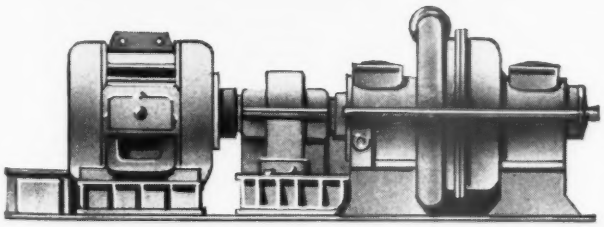

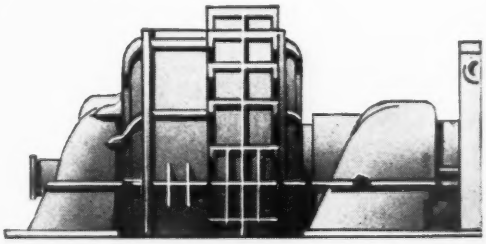

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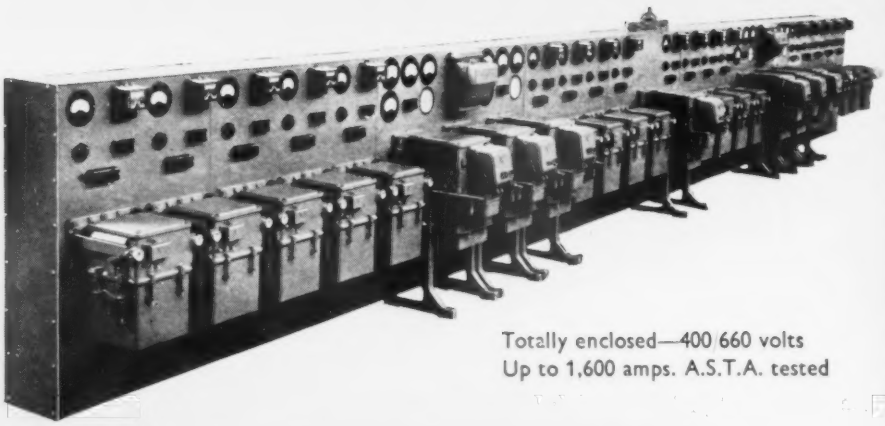

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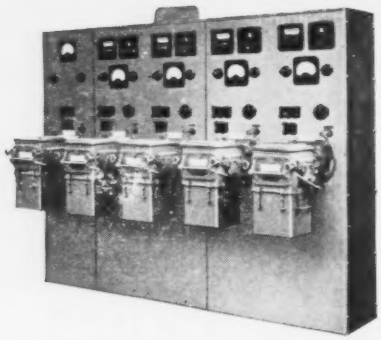

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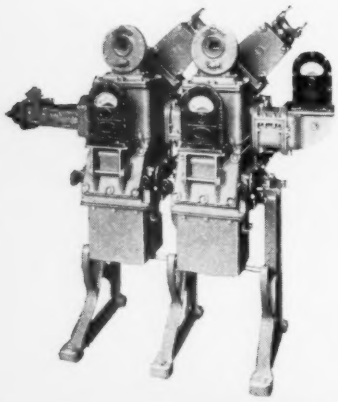

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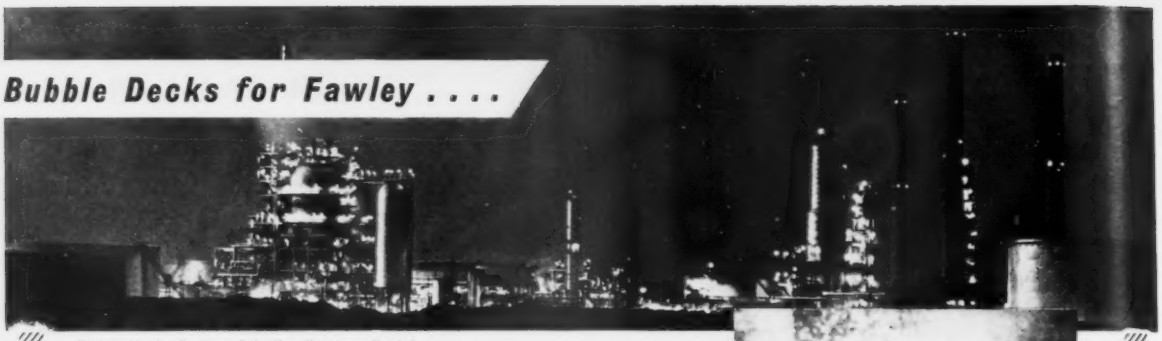

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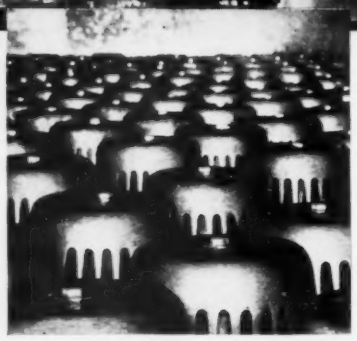

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REVIEW

Volume 13, No. 152 August 1959

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The Drake Centenary

One hundred years ago, on 27 August 1859, occurred an event at Titusville, Pennsylvania, which is generally accepted as being the start of the oil industry.

Oil, in various forms, had been known and used for centuries in many parts of the world. In the Middle East, oil and gas seepages had caused the "sacred fires" venerated in certain local religions; bitumen had been used in the building of temples, houses, and the Tower of Babel; Marco Polo records its use by the Asian tribes as a cure for camel mange; the Greeks utilized oil in "liquid fire" for military use; and the Indians of North America and Patagonia had long found it useful for medicinal purposes.

Prior to 1859, petroleum had been found in surface seepages and in hand-dug pits, and also whilst drilling water or salt wells.

Several other countries claim the first oil well. Some of the early accounts of oil diggings or drillings are at times obscure, and the dates concerned often in doubt, but it would appear that the event most likely to challenge the 1859 operation for precedence—at least in the producing sense—happened in Canada.

In 1856, James Miller Williams, an Ontario businessman, bought out the properties of Charles N. Tripp, who had been working the "gum beds" near Oil Springs, Ontario. By boiling the muck from the beds he had obtained asphalt. Williams' first well was dug to a depth of 27 feet on the banks of the Thames River, near Bothwell. After abandoning this well he moved to nearby Enniskellin, dug a well to 65 feet, and found liquid petroleum. At this stage the sketchy evidence on the date of Williams' *drilling* operations becomes important, for at some time between 1857 and 1859 he decided to drill into bed rock, and obtained further supplies of liquid petroleum. Whether he actually did *drill* a successful oil well as such, before August 1859, is highly controversial. Sufficient is it that Canada would appear to think that he did. Canadians celebrated oil's centenary in June 1958 and issued a stamp to commemorate the occasion. It can be said, however, that Williams organized the first successful integrated oil operation. He built Canada's first oil refinery on the banks of Black Creek, and transported and marketed its products. His operations were, however, apparently only of local interest.

A Shell photograph

Courtesy Drake Well Museum

A BP photograph

Drilling rigs—past and present. The Drake well (centre) *with Colonel Drake* (right) *and Peter Wilson who encouraged him. In comparison a modern deep drilling rig in Shell's La Paz field is seen* (left) *and "Adma Enterprise"* (right) *drilling at the offshore site of Umm Shaif No. 1 in the Persian Gulf for the Abu Dhabi Marine Areas Ltd*

In 1880, Williams disposed of his oil interests because of increasingly keen competition from the United States.

The oil springs of north-western Pennsylvania had been known for centuries. When the first village was laid out at Titusville in 1809 the settlers learnt from the Indians of the presence of an oil spring close to the nearby stream. One of the earliest settlers there, Nathaniel Carey, decided to capitalize on this and peddled oil obtained from the springs as a medicine.

This area had also long been a popular region for the working of salt wells, and Samuel Kier, whose father had been operating salt wells at Tarentum for some years, likewise realized the profit that could be derived from the "medicinal "oil found in some of his father's diggings. He bottled and sold the oil as a patent cure-all, entitled "Kier's Petroleum or Rock Oil". Later, after installing a one-barrel still in a main street in Pittsburgh, he sold the "carbon oil" thereby obtained as a—somewhat smoky—illuminant. This carbon oil soon came into general use in much of western Pennsylvania, and Kier had to install a larger still to meet the demand.

The oil springs at Titusville had aroused the interest of a Dr Francis Brewer, a local physician, whose father was one of the owners of Brewer, Watson, and Company, a lumber firm upon whose holdings one of the largest oil springs was situated—only a short distance from Oil Creek. As a result, the property was leased for petroleum purposes and J. D. Angier, a Titusville resident, was employed to work the springs and obtain oil for illuminants and lubrication. Angier obtained about three to four gallons a day from his lease.

In 1853 Dr Brewer took a sample of the local oil to show to a friend, Dr Dixi Crosby of the Dartmouth College (New Hampshire) medical school, where he himself had studied. Crosby evinced great interest in the sample and mentioned it to another graduate of the school, George H. Bissell, a young New York lawyer.

Bissell saw its commercial possibilities if only the oil could be produced on a large scale. After investigating the possibilities of developing the products of Oil Creek, Bissell decided to obtain the oil rights over the properties of Brewer, Watson, and Co. and others. In conjunction with Jonathan G. Eveleth, his business partner, he agreed to form a company to develop the springs and market petroleum. The enthusiasm of Bissell and his partner fired the imaginations of businessmen in New Haven, and of James M. Townsend, president of the City Savings Bank, in particular.

Before making any investment, however, the New Haven citizens thought they should have a scientific analysis of the oil made in order to decide its economic value. To this end, in the latter part of 1854, two prominent chemists, Luther Atwood, of Boston, and Professor Benjamin Silliman, Jr, of Yale College, were asked to undertake the analysis.

Atwood reported in a short time on the excellent quality of the oil and its possible applications. Professor Silliman's longer, and more comprehensive, analysis was not completed until April 1855, some four months later.

Meanwhile, in November 1854, Dr Brewer transferred the land to Bissell and Eveleth who thereupon organized the Pennsylvania Rock Oil Company of New York, but the stock did not sell. When Silliman's report became available it was found to be favourable. Although couched in somewhat cautious terms, it gave the opinion that "by simple and not very expensive process" the Titusville oil could be manufactured into "very valuable products."

The report resulted in a much more favourable view of the enterprise on the part of the New York and New Haven financiers. It was thought by Bissell that, with the climate of opinion then operating and considering the comparable attractiveness of the tax laws, it would be preferable to reorganize the company in Connecticut. So, the Pennsylvania Rock Oil Co. of Connecticut was formed in September 1855, and the new company obtained a lease of the Titusville properties for a period of ninety-nine years.

It was decided that the property should be investigated and Townsend, a director of the Company, selected one Edwin L. Drake for that purpose.

Drake had been born at Greenville, N.Y., and had worked successively as a clerk, a farm labourer, an express agent, and a railway conductor. His manner and presence were at least impressive. The title of "Colonel" was a courtesy one bestowed upon Drake by Townsend in order to impress the local inhabitants in Titusville.

Drake, who received a warm welcome on his arrival in December 1857, inspected the oil springs and the method used to obtain the oil from them. He returned to New Haven with a favourable report on the possibilities and as a result the Seneca Oil Company was formed as successor to the Pennsylvania Rock Oil Co. Drake was elected chairman and general agent of the Company, and a sum of money was placed at his disposal.

The operations were left entirely in the new general agent's hands, and the digging of trenches commenced. The next attempt was made by digging a pit, but water flooding made this impracticable and Drake then conceived the new idea of drilling for oil.

He visited Tarentum and after talks with the salt-well owners, and without any practical experience, installed drilling equipment on the site at Oil Creek.

The result met with amusement and derision from the local citizens, who dubbed the derrick "Drake's yoke".

Early in 1859, after many difficulties in obtaining a driller, William A. Smith (thereafter known as Uncle Billy), a blacksmith and an experienced salt-well man, was hired to make the tools and to drill the well. Drilling commenced in June.

In order to prevent the influx of surface water into the well, Drake decided to drive heavy iron pipe down to bedrock. This was the first application of well casing. At 32 feet the pipe rested on solid rock and drilling commenced at a rate of about three feet a day. Meanwhile there had been many delays and time was passing and no favourable result had been forthcoming. The stockholders' enthusiasm was beginning to wane, and they finally refused to advance Drake any more money, instructing him to pay all outstanding bills and return to New Haven.

Fortunately the message did not arrive before 27 August, for, on the afternoon of Saturday the 27th, when the drill was at a depth of about 69 feet and as the crew was about to hang up the tools for the weekend, the drill dropped into a crevice at a depth of 69½ feet.

Uncle Billy Smith and his assistants went home unaware of what had happened. Late on the afternoon of the next day, the 28th, Smith visited the well-site, noticed something strange about the fluid in the well, and baled some of it out. It was petroleum!

Filled with excitement, Smith sent his son out to spread the news. By next morning the well-site was the focal point of interest for crowds swarming in from the neighbouring districts.

The well apparently never produced at any time more than about 8-10 barrels a day. Drake himself seemed to have

missed the full implication of what he had done. It is recorded that the oil strike left him comparatively unmoved. He rebuilt the first well after it had been destroyed by fire, and drilled two more, but never bought any of the land himself. By the time he had realized the success that others were having, it was too late. He became a J.P. and a buyer of oil on commission for a New York firm. Turning to speculation on Wall Street he lost most of his money and his health declined.

The people of Titusville, at the instigation of some of his friends, subscribed about $5000 to buy a home and provide an income for the "Colonel". The Pennsylvania legislature presented Drake with an annual income of $5100. In November 1880, suffering from severe muscular neuralgia, and a pensioner of the State, Edwin L. Drake died at Bethlehem, Pennsylvania.

Bissell, as soon as he had heard the news of the successful completion of the Drake well, bought out as much of the stock of the Pennsylvania Rock Oil Co. as he could. Hurrying to Titusville he quickly leased or purchased farm after farm in the district, and, before a couple of months had elapsed, had made a fortune.

Before very long the oil-rush was on, for Drake, by drilling the first well expressly to find oil, had shown the world how a cheap, efficient, illuminant could be obtained in greater quantities than hitherto.

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This year yet another oil anniversary is being celebrated—the fiftieth year of Castrol motor oils

It was in 1899 that Charles Cheers Wakefield founded the Wakefield company, and for the first six or seven years sales were mainly confined to railway oils. Sometime in 1906—a more exact date has not been recorded—a lubricating oil was introduced for that comparatively recent innovation, the petrol engine. For the next two years Wakefield Motor Oil was sold on a limited scale, its largest user being the Vanguard Bus Company, a London omnibus concern.

At this time, there were only some 48,000 cars and 35,000 motor-cycles in Britain, and flying was in its infancy, but Wakefield shrewdly foresaw the immense possibilities which lay ahead.

As an initial step the Company's motor oil was given a distinctive brand name, and in 1909 Wakefield Motor Oil "Castrol Brand" was brought into being. In 1909 the name was changed to that of the now world-famous "Castrol Motor Oil."

Sir Charles Wakefield, as he had then become, clearly realized the value of publicity, and, from the early days Castrol successes were widely advertised. The pioneer air flights, the winning of TT races, and the breaking of land speed records, were closely allied to Castrol publicity, then as now.

As a result the sales of the new oil increased at an amazing rate, and in 1913 it was necessary to move the Company's home from its small Cannon Street premises to Wakefield House, in Cheapside.

In the 1914–18 war, Castrol was widely used by all the fighting services, but especially by the Royal Flying Corps, for Castrol "R" was one of the few oils suitable for the rotary-engined aircraft then in use.

Meanwhile mechanized farming was coming into use, and to meet the demand for a reliable tractor oil *Agricastrol* was introduced in 1917. It was such a success that by only a year later it was found that the majority of Fordson tractors were using the new oil.

At the end of the war the motor industry was well established, and with the advent of mass production methods, there began a vast increase in motor vehicle output. The car population grew from a registered figure of 100,000 in 1913 to 245,000 by 1921, when a total of 370,000 motor cycles was also recorded.

The next twenty years were years of great achievement on land, sea, and air. The urge was to travel further and faster by every form of mechanical transport, and Lord Wakefield, seeing the technical importance of such striving, became the driving force behind a great many of the British onslaughts on speed records and feats of endurance. Castrol was used by many of the renowned motor sport personalities of the day.

In 1935 a most important event occurred, and one which was to have a marked effect on the fortunes of Castrol—the introduction of the new "Patent Castrol". Since its inception the constituents of the oil had undergone many changes to cater for the changing demands of the petrol engine from its beginnings, as what was mainly a vegetable oil, to what was now entirely a mineral oil. In 1935, however, two new additives were incorporated in Castrol, oleates of tin and chromium, which imparted anti-oxidation and anti-corrosion properties, and gave the oil certain detergent-dispersant qualities.

This was the first commercial use of such additives in a motor oil, and pre-dated by ten years their introduction in the U.S.A.

Three years later, in answer to appeals from car manufacturers for an oil which, by possessing increased fluidity when cold, would provide instantaneous protection for their high performance engine, Castrol was made thinner, or less viscous, when cold. It was the first "lighter" oil to be announced and foreshadowed today's multi-grade oils.

By the outbreak of the second world war Castrol was used by half of the 2 million cars and 460,000 motor cycles registered in Britain. During the war, as in the previous episode of world strife, the Company played its part in supplying the armed forces, and in 1944 the firm became a public company.

Its work in lubricating oil research has more than trebled since the end of the war and has resulted in, amongst other things, the first multi-grade oil at a normal price—*Castrolite*. Castrol achievements in racing and record breaking have likewise continued in their traditions of earlier days.

Since 1945 the Castrol organization has expanded at an intensified rate, and today the twenty-one companies it controls together constitute the largest independent oil group in the world.

Around the Branches

ABADAN, BAHRAIN, ESSEX, FAWLEY, KUWAIT, LONDON, NORTHERN, SCOTTISH, SOUTH-EASTERN, SOUTH WALES, STANLOW, TRINIDAD, YORKSHIRE

Trinidad Branch Dinner

The 21st Annual Dinner of the Trinidad Branch of the Institute was held on 25 April at the Bretton Hall Hotel, Port-of-Spain, the guest of honour being His Excellency the Governor, Sir Edward Betham Beetham.

Other guests of the Branch included Sir Joseph Mathieu-Perez, W. T. Boyd, chairman of the Trinidad joint group of the Institutions of Civil, Mechanical, and Electrical Chartered Engineers, L. N. Constantine, Minister of Works and Transport, and Gerard Montano, Minister of Housing and Local Government.

The toast to the Institute was given by Mr Boyd, who in his speech referred back to the days of the Trinidad oil industry before the foundation of the Branch in 1928. He described some of the drilling operations of the time and the hazards they entailed, and said that one would be looking to the technicians of the Institute of Petroleum for the further development of the industry.

The chairman and some of the guests

Left to right: *Dr A. L. Down, the Branch Chairman, A. Clayton Smith, Sir Henry Pierre*

Dr A. L. Down, the chairman, in replying, traced the growth of the Institute of Petroleum itself, and of the Trinidad Branch which, by the end of 1958, had increased its non-corporate membership to 55, since the category was introduced in Trinidad in 1956. Dr Down then referred to some of the highlights of branch meetings during the past year, and in commenting on the successful role of the Branch, paid tribute on that account to Dr K. W. Barr, last year's energetic and experienced chairman.

W. H. Vivian proposed the toast of "The Guests", and congratulated Sir Joseph Mathieu-Perez, on behalf of the

Two views of the top table. Left to right: *Major W. H. Vivian; H.E. Sir Edward Betham Beetham; Dr A. L. Down; Air Vice-Marshal Claude Vincent; . . .*

. . . *and* left to right: *P. M. A. Carden; the hon sec, H. C. Hobson; Sir Henry Pierre; D. P. J. Holbrook; Sir Joseph Mathieu-Perez; Major W. H. Vivian; HE Sir Edward Betham Beetham; Dr A. L. Down; C. P. Garner Richards; Air Vice-Marshal Claude Vincent*

Branch, on his appointment to the board of directors of one of the leading oil companies in Trinidad. Sir Joseph replied to the toast.

H.E. the Governor said, in his address, that he found the review of the Branch activities interesting and that this knowledge could with advantage be communicated to a much wider public. Sir Edward stressed the importance of everyone in Trinidad understanding the importance of the oil industry to its economy and development, and that he felt that it was not beyond the power of the Branch to explain the working of the oil industry in terms easily understood by the general public.

He also hoped that in some way the Branch could help in combating the major problem of pollution by oil from ships of the island's beaches, which were among the finest in the world.

South Wales Branch

On 21 May a meeting of the South Wales Branch of the Institute was held at which D. L. Pratt, M.A., A.M.I.Mech.E., transport officer of the Commonwealth Trans-Antarctic Expedition, and J. R. Lodwick, B.Sc., A.R.I.C., of BP Research Station, Sunbury, gave a lecture on "Fuels and Lubricants for the Commonwealth Trans-Antarctic Expedition".

Mr Pratt outlined the various problems with regard to choice of vehicle and specification of fuels to meet the rigours of a journey involving a distance of two thousand miles at sub-zero temperature and high wind velocities. He summarized the types of vehicles used in previous expeditions and the distances which they traversed. These amounted to below one tenth of the distance which had to be covered. The choice eventually fell on light vehicles using petrol for startability, with pre-heating if necessary, and modified to overcome traction problems.

Mr. Lodwick summarized the work carried out at BP Research Station, Sunbury, to decide the various fuels and lubricants and their specifications. It was essential to keep the number of grades to an absolute minimum and where possible interchangeable.

Mr Pratt then gave an entertaining description of the journey, mentioning some of the humorous incidents, but dealing in the main with the difficulties encountered with transport and the expedients needed to overcome them.

An interesting discussion followed when the speakers answered questions relating to many aspects of the expedition. The chairman passed a hearty vote of thanks which was warmly applauded by the members present.

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ACTIVITIES OF THE SOCIETY OF INSTRUMENT TECHNOLOGY

The Annual General Meeting of the Society of Instrument Technology was held on 6 May 1959. This was followed by the presentation of the Bowen Prize by R. Barrington Brock, M.B.E., president of the Scientific Instrument Manufacturers Association of Great Britain, the donors of the Prize, to J. E. Samson for his paper, "Dynamic Characteristics of Pneumatic Transmission".

Immediately after the presentation the president of the Society, J. F. Coales, O.B.E., M.A., M.I.E.E., F.Inst.P., gave his presidential address, "The Education of Instrument Technologists and Control Engineers". He mentioned how the last thirty years had seen a very large change in the pattern of industrial employment. Greater demand for manufactured goods had resulted in the use of automatic production and other manufacturing methods generally known as automation. Large numbers of professional engineers and scientists were now being employed in industry —in many firms more than a tenth of the total number employed—and the trend was increasing.

The probable future requirements for skilled personnel were then reviewed, both for the U.S.A. and other countries, as well as for the U.K.

From these conclusions the need for control engineers and instrument technologists were estimated, and the development of their professional education was outlined. The syllabi of the various relevant examinations were discussed and suggestions were made regarding possible amendments and additions, and the necessity for accredited professional qualifications to be organized in these subjects. Appendixes to the paper amplified the closing remarks by listing a proposed syllabus for ONC in instrument technology.

CORRESPONDENCE

To the Editor, the *IP Review*

Dear Sir,

The London Branch of the Institute will begin its next programme of meetings at the end of September. I would like to draw the attention of members of the Institute in the London area, especially to those who have recently joined the Institute, to the benefits of membership of the Branch and how to apply for it.

The purpose of the Branch is to enable members of the Institute of Petroleum and others interested in the objects of the Institute, to have a local organization.

Corporate members who live or work within the London area, are eligible for membership of the Branch, without payment of a subscription.

Those interested in our programme who wish to join the London Branch should apply to D. M. Watson, c/o Standard Vacuum Oil Co. Ltd, Africa House, W.C.2.

Notices of meetings are sent to all our Branch members. Our lectures deal with subjects of general interest to those engaged in the petroleum and allied industries in a less specialized way than many of the papers presented to the Institute.

The speakers are drawn from the front rank of industry and aspects and trends of the current activities of the industry are authoritatively reviewed.

Special attention is paid to the interests of non-technical members such as work in London; in addition the Branch organizes a number of social functions.

Yours truly,

J. C. JEWELL,
Chairman.

*Oil and the Community**

by J. F. LUTTRELL†

The factors in present-day relationships between the oil industry and the community within a Middle Eastern context, fall into five headings: personnel in the oil industry, (or in Arabic, "Ahl al Naft"); economic links through trade and commerce; the social impact of housing; education and training; and finally, the day-to-day exchange of human relations. Politics, although at times a lively factor, lie outside the orbit of this survey.

It is difficult to lay down any hard and fast rules applicable to relationships in the Middle East as a whole. What is desirable in Bahrain may be impracticable in Beirut, or vice versa. Social customs, economic trends, and educational standards all have an individual bearing on local relations and require separate examination.

But while methods may differ from country to country, or from company to company, the guiding principle should remain the same. Granted that the first task of an oil company is to extract and market oil, the second should be to establish and maintain good relations with the community. To carry this out successfully, it is necessary to pursue a coherent policy throughout all departments of the industry: but particularly in regard to personnel, education and training, stores, transport and commissariat, and the main branches of engineering.

In the early days of oil development in the Middle East the trend was towards self-sufficiency. There may have been good reasons for this—lack of local resources, the need to get the oil flowing and allow other policies to follow later. But in recent years the industry has been faced with a clear-cut choice between autonomy and co-operation. Almost without hesitation, it has discarded the first concept in favour of the second. As a result, isolated oil enclaves are nowadays out of fashion: instead we see a growing tendency to intermingle —both in social and economic spheres: through communal housing, by increasing the proportion of Arab staff, and by closer contacts with the local market. The future stability of the oil industry in the Middle East depends on how effectively and sincerely this new policy is followed.

Personnel

The first, and probably the strongest, link between an oil company and the community is its personnel, recruited from among the population of the country. For every thousand employees there are perhaps another five thousand dependents. In the State of Qatar, for example, oil personnel and their families represent rather more than one-third of the population. Comparable proportions can be found in Bahrain and Kuwait, whilst in larger countries like Iraq and Saudi Arabia the percentage, although significant, would be less. So the benefits of a regular pay packet and better living conditions stretch far away from the oilfield to other towns and outlying villages. Good relations between an oil company and the community are based, not on a handful of specialists, but on the broad mass of employees. Each man must be considered as a citizen, with private interests and social obligations outside working hours. Company Arabic magazines, documentary films, radio and television programmes all help to create a feeling of community. Consultative committees, recreation centres, and sporting activities are of equal value in encouraging citizenship and public spirit. Whilst clubs are built and equipped by the oil company, they can soon become self-reliant through elected committees and voluntary workers. So in all the main companies—Aramco, KOC, Bapco, IPC, etc—a recognizable pattern of employee has emerged in the past ten years: men who with their superior training and living conditions will have a significant part to play in the future of their communities.

Local Trade and Industry

The first step in fostering local trade and industry is to study the economy of the nearest town. This will reveal a framework of local industries common to all countries of the Middle East, though at different levels of development: brick, tile, and juss factories, blacksmithing, carpentry workshops, service garages, and printing presses. On the commercial side there is generally a solid nucleus of established merchants dealing in the import–export trade, and radiating from them a wide variety of shops and general stores. By giving regular business to these manufacturers, merchants, and shopkeepers, the oil industry can help the local economy and at the same time enhance its own reputation. It is common sense to have bungalow furniture and boiler suits made in the bazaar, rather than bring them all the way from Europe or the United States. Other items such as foodstuffs, electrical fittings, and vehicle spare parts can be bought from local merchants. In recent years remarkable progress has been made by Aramco with its Arab Commercial Development department, by IPC and Associates through their integration policy, and other companies working in the same direction. During the first six months of this year QPC spent nearly six million rupees in Qatar jointly on local purchase and contracts. This work was spread among 55 merchants and contractors. This policy needs care and periodic re-appraisal: for example, there is a grave danger of doing business with only two or three big contractors, thereby causing resentment among the remainder. Contracts between the Company and local businessmen need not be confined to financial transactions. They can be followed by social gatherings, distribution of Company magazines, and where practicable, documentary films. Commercial banks, with their experience of economic trends, can form useful allies; increased local purchase by the oil companies helps to swell the number of local bank accounts and keep money in circulation.

Housing Schemes

A third link in local relations, and perhaps the most visible one, is employee housing. In the early days there

* Read before IP Bahrain Branch, 18 August 1958.

† Public Relations Officer, Qatar Petroleum Co. Ltd.

was a tendency to create employee estates within oilfield enclaves, cut off from the rest of the community. This policy has since been reversed by the launching of home ownership and related schemes. The first objective is to create security and citizenship among employees, the second to avoid isolationism. The effect on the employee can be appreciated by a visit to a new home. Smart drawing rooms, modern kitchens, and bathrooms indicate a desire for higher living standards, as strong in Arabia as it is in Europe and America. The force of example is strong, for next to employee houses one can see many others being built to the same pattern.

Apart from contributing to the stability and welfare of personnel, such schemes can, and do, benefit the community as a whole. At Kirkuk, for example, where about 700 home ownership scheme houses have been built in the past five years, the work has been spread among more than 20 small builders in the city. Most of these people were previously masons or bricklayers and are now running their own businesses. The houses are built to a high standard and range from £700 or £800 for a 2- or 3-roomed bungalow to £3000 or more for a luxurious dwelling, according to the means and tastes of the owner. Their architectural effect on the city has been profound.

Education and Training

Whilst formal education is the province of the Government, the oil companies are nowadays making big efforts in the fields of technical and commercial training. These schemes are designed to fit recruits for careers in the oil industry, but even if a percentage of trainees spill over into outside jobs, the advantage to the community is sufficient compensation. Oil company training departments work in consultation with local education authorities, and both find it useful to exchange ideas and information.

A valuable exercise in community relations is the organization of regular school visits to oilfields and other installations of the industry. The usefulness of such visits can be enhanced by showing Arabic films on oil, by lectures, and visual aids such as wall charts and exhibits. Another way of reinforcing an impression is to offer monthly prizes for the best essay, written by students visiting an oilfield, refinery, or terminal. Many schools in the Middle East nowadays devote part of their curricula to oil, and science classrooms contain bottles of petroleum products and core samples.

As a result of the emphasis on technical training, both by the Government and the oil industry, the nucleus of a new class—the qualified technician—has begun to emerge all over the Middle East. This is perhaps one of the most hopeful results created by the inter-relation of oil and the community.

We should seek to foster among this rising generation a pride and interest in the oil industry and all its ramifications. Scholarships can be offered to suitable candidates, who wish to specialize in physics, chemistry, or branches of engineering. Schemes are operated by the oil companies whereby national students are sent to Britain to study at the company's expense. Thus two present gaps in the community—the artisan and trained executive—are being gradually filled by government and oil company technical schools on the spot, and scholarships abroad.

Human Relations

In the Middle East, more than anywhere in the world, personal relationships matter most in the long run. From the earliest days of Arab history, hospitality and friendship towards one's neighbour have been fundamental principles in human conduct. The Arabic saying—"Jaruka, Jaruka, Thumma Akhaka": "Your neighbour, your neighbour, then your brother" is not an empty phrase. It has a depth of meaning to every Arab.

Westerners living in Arab countries of the Middle East should be encouraged to mix more freely on equal terms with the people. Language constitutes a barrier, but this can be overcome by a few months of methodical study. Friendliness counts more than fluency, and goodwill can outweigh grammar. There are always opportunities for meeting and mixing with the community: country expeditions, visits to a Shaikh's Majlis, sporting fixtures between oil company and outside clubs. Some people acquire language qualifications, either in colloquial or written Arabic, and then fail to put this to practical use. Informal parties, at which the Arab and western guests are equally balanced, can provide a pleasant forum for social interchange. The two main festivals of the Islamic year—Id al Fitr (after Ramadhan) and Id al Adha—are the best times to exchange greetings with Arab friends, but there is no need to limit oneself to feast days and holidays.

For the serious-minded there is scope for studying social customs, history, and archaeology. The Middle East is well known as the birth place of modern civilization and as such provides a rich field for research. There are many legendary cities waiting to be re-discovered: Ur and Babylon, Palmyra and Petra, Ba'albeck and Byblos, to name only a few. Some are within reach of the oilfield or terminal, others may be visited on local leave. Middle East architecture forms a study in itself. The great mosques of the Middle East—the Ummayad of Damascus, Haram al Sharif of Jerusalem, and Ibn Tulun of Cairo; the old crusader castles, of which the crowning example is the Krak des Chevaliers, between Homs and Tripoli.

To know the Middle East reasonably well, it is necessary to read history and travel books on the area, of which a bewildering range exists in many languages. But there are standard works such as Professor Philip Hitti's *History of the Arabs* or the Oxford *Legacy of Islam* which give a general picture. Two useful compendia on social customs are Lane's *Modern Egyptians*, published early in the 19th century, and Colonel Dickson's *Arab of the Desert*, in the present century.

A first-class library is a valuable aid towards understanding the past and present history of the Middle East. It is also refreshing to find oil companies assisting scientific research in Arab countries. One recent example is the acknowledgment to Aramco in Meinertzhagen's classic work, *Birds of Arabia*. The Gulbenkian Foundation, whose funds derive originally from the great oilfields of Iraq, has in recent years made munificent donations to the cause of art and science. These examples are taken at random: many others exist, and more are being planned for the future.

While history and art provide fields for study, one should not dwell entirely in the past. Nineveh and Ur are in ruins, but new cities have emerged in their place. Charles Doughty, Richard Burton, and T. E. Lawrence have recorded the romantic phase of Bedouin tents and desert raiders. The modern representatives of Arabia are her engineers, architects, and doctors; her artists and poets who paint and write in the idiom of the 20th century. Many of the new generation can be found in the oil industry. Their presence and example automatically helps to improve relations between the company and the community.

The above outline is a brief survey of relationships social as well as economic, in the present age of transition. Although the picture may be painted in rather glowing colours, there is plenty of scope for improvement: in the fields of personnel, trade and commerce, better living standards, education and training, and in human relations. The oil companies today represent the bulk of the western community in the Middle East. Their impact upon the countries in which they operate is therefore correspondingly great. By pursuing liberal policies, beyond the strict letter of their agreements, they can do much to create better understanding. The future depends not only upon proved oil reserves, but equally upon our proved sincerity and goodwill towards our friends and neighbours in the Middle East.

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1959 CORROSION EXHIBITION

The figure of £600 million a year has been given as an estimate of the cost of corrosion to the British economy. In the U.S.A. annual losses from corrosion are said to be almost $6000 million. These immense costs, losses of efficiency, and the hazards of corroding equipment, can in large measure be prevented; it has been estimated that an unprotected tanker, for example, might last only 12 years, after which the hull would have to be renewed at a cost of £400,000. Cathodic protection of the same ship over 16 years would cost £55,000—thereby saving about £345,000.

It was because of this immense problem that the Corrosion Exhibition was held last April at the Royal Horticultural Society's Hall, London. Its aim was to highlight the evils of corrosion by presenting before all concerned the weapons that can be used to fight it.

The following are some of the firms who exhibited at the Exhibition, with particulars of their products. Further information should be obtained from the companies concerned.

B.B. Chemical Co. Ltd, Ulverscroft Road, Leicester.
The *Bostik Endurion* process, a simple immersion technique imparting a fine textured, wear-resistant, anti-corrosive finish to ferrous metals. It is a non-toxic chemical after-treatment applied to a base phosphate coating, reacting to induce a dense surface condition.

British Paints Ltd, Portland Road, Newcastle-upon-Tyne 2.
Apexoir Number 3, a preservative surfacing material for metal. Particularly effective on surfaces in contact with fresh or salt water, or moisture at any temperature below 125° F, or with dry heat, dry air, or gases at any temperature below 450° F.
Torpedo wash primer for aluminium and other non-ferrous metals. *Tankeros* 86, a zinc dust paint, which dries giving a hard abrasion-resistant coating, insoluble in water and in practically any common organic solvent. Used especially for the interiors of cargo tanks or oil tankers. *Apexior* Compound No. 1 protective surfacing material for steel and iron, particularly for boiler and turbine use.

Cathodic Corrosion Control Ltd, Duncan House, Dolphin Square, London, S.W.1.
A new, extremely light, transistorized holiday detector, the *Perram Pacc*, powered by six Varley dry accumulators, and operating on a DC output. Tested satisfactorily on lines of up to 48 inches diameter. Output is in 2 kV steps from 6–20 kV, with output current limited to about one milliampere.

Corrosion Ltd, 16 Gloucester Place, Portman Square, London, W.1.
Epiglo epoxy-based protective coatings for metals, concrete, wood, etc: can be applied in extremes of temperature. *Glopane* cold galvanizing for use in the domestic, agricultural, maritime, and industrial fields.

DSIR, National Chemical Laboratory, Teddington, Middlesex.
Details published of the volatile corrosion inhibitors (VCI's) to prevent corrosion of packaged metallic articles or standby equipment. Introduced as a coating on wrapping paper, or in greater bulk in cloth bags, or in open trays. Their vapours permeate surrounding spaces and protect exposed metal surfaces through an adsorption process. The use of VCI's are, however, carefully delineated for certain conditions. Particulars were also given of some DSIR experiments on corrosion.

Du Pont (U.K.) Ltd, 76 Jermyn Street, London, S.W.1.
Details given of the part the Company's synthetic rubbers are playing in combating corrosion: *Neoprene* the general purpose elastomer, resistant to many oils and chemicals; *Hypalon* for elastomer-based protective coatings; and *Viton*, for service in oils, lubricants, and solvents at high temperatures.

F.A. (Membranes) Ltd, St Helens, Lancs.
The *Famclad System*, for buried insulated pipelines, using a waterproof plastic sheet sealed longitudinally and circumferentially around the pipe insulation to form a complete water barrier. The sheet is then protected by an outer wrapping of wire-reinforced bituminous sheeting, sealed to the inner waterproof sheet with a hot-poured bitumen.

Fibreglass Ltd, St Helens, Lancs.
Examples were presented of industrial applications of Fibreglass reinforced plastics; inner and, if necessary, outer wrapping of oil, gas, and water pipelines, with coatings of asphalt and coal tar. Also for the moulding of hoods to be used over fumes from chemical process tanks, moulded tanks, ducting, and for pipe reinforcement.

John Gosheron & Co. Ltd, The Packaging and Industrial Tape Centre, Albert Embankment, London, S.E.11.
Self-adhesive and self-bonding pvc tapes for use above and below ground. Polythene pipe-protection tape, and pvc, polythene, and melinex self-adhesive tapes for electrical production equipment and other industrial applications.

F. A. Hughes & Co. Ltd, Cathodic Protection Division, 4 Stanhope Gate, London, W.1.
Cathodic protection of the whole of a ship's underwater hull by means of external hull anodes fitted in conjunction with the normal paint system. These dispense with the need for expensive surface preparation and reduce the amount of anti-corrosive paint required. Measures include the "multi-fin system" of anodes mounted in the deckhead, and *Oppanol* BA sheeting, easily-welded into one homogeneous lining, and originally derived from the low-temperature polymerization of *iso*butylene.

Hunter & Co. Ltd, 19 Clarges Street, London, W.1.
Hunterseal—an entirely new priming and painting system for application to rusty and wet areas. It has very high alkali and acid-resistant properties, thereby reportedly stopping the anodic reaction by preventing the flow of electric current between the anodic and cathodic elements.

H. Incledon & Co. Ltd, Winnock Road, West Drayton, Middlesex.
Durapipe Z, Ziegler high-density polyethylene, semi-rigid pipe and fittings for cold water, lower temperature and pressure uses; *Durapipe K* rubber resin blend, rigid pipe and fittings for lower temperatures and moderate pressures; and *Durapipe N* nylon rigid pipe and fittings for high temperatures and pressures in the oil and process industries.

Metal and Pipeline Endurance Ltd, Artillery Mansions, 75 Victoria Street, London, S.W.1.

Magnesium and zinc sacrificial anodes for ships and land services, particularly the MAPEL patented finned anodes. Also platinized lead anodes at high current densities, and platinized titanium anodes which are partly displacing the previous graphite and silicon-iron variety. A further development is a pile-driven anode for use in soft ground.

Metallic Surfaces Research Laboratories Ltd and **Metallic Surfaces Developments Ltd,** The Market House, Uxbridge, Middlesex.

Exhibit is divided into two main sections: the first of which comprises examples of current research undertaken by the laboratories, which include protection of metals against high temperature oxidation; the effect of high frequency heating on diffusion; corrosion-protection on ultra high tensile steels; and vacuum deposition of metals. The second section features the *Akrom* improved chromizing processes perfected by the research company and offered under licence by Metallic Services Developments Ltd.

Plus Gas Company Ltd, 1–11 Hay Hill, London, W.1.

Formula A, dismantling fluid for the removal of rust in all branches of industry. It contains no acid or corrosive constituents and can be used upon all metals, ferrous and non-ferrous.

Formula B, transparent protective fluid which forms a complete tough sealed coating which adheres to all ferrous and non-ferrous metals.

Formula E, a new tannating process for the preparation of rusted surfaces prior to painting.

Prodorite Ltd, Eagle Works, Wednesbury, Staffs.

Anti-corrosion service to industry, carrying out complete installations, including the original design and construction on site. This covers chemical engineering and acid-proof constructions of tanks, process vessels, and drainage and effluent schemes, embodying special cements, mastics, synthetic resin surface coatings (for protection against crude oils, diesel oils, and high octane fuels, etc), and plastic fabrications. Advice is also available for those firms desirous of carrying out their own installations or maintenance.

Protective Rubber Coatings (Bristol) Ltd, Payne's Shipyard Coronation Road, Bristol 3.

Manufacturers of *Limpetite*, the Company's neoprene-based self-curing synthetic rubber for anti-corrosion coatings. It has been used with particular success on metal surfaces in the components of the following spheres of applications *in situ* or at their works: marine steam condenser components, marine (outboard) units, electricity generating stations, diesel engines, and general engineering.

Shell International Chemical Company Ltd, Marlborough House, 15–17 Gt Marlborough Street, London, W.1.

Epikote epoxy resins used in the production of chemically-resistant surface coatings and reinforced plastic compositions not subject to corrosion. *Carina* pvc and *Carlona* polyethylene for applications where their non-corrodibility and chemical resistance are important. Shell Vapour Phase Inhibitor, either in the form of crystals or impregnated paper, which protects metal products by an envelope of vapour—no oils, greases, hot dips, or other moisture-proof barriers are required.

Shell-Mex and B.P. Ltd, Shell-Mex House, Strand, London, W.C.2.

Particulars of, amongst other things, the Company's range of petroleum-based rust protectives which are grouped under the generic title of *Ensis*. These are designed primarily for application to iron and steel, but are also suitable for such metals as aluminium, brass, and copper. They are sub-divided as follows—

Shell *Ensis* Oils (100 Series)—non-drying oily film protectives.

Shell *Ensis* Fluids (200 Series)—solvent deposited protectives forming soft or hard films. Some grades possess de-watering properties.

Shell *Ensis* Compounds (300 Series)—grease-like films of soft or medium consistency.

Shell *Ensis* Engine Oils (10W to 50 Range)—oils specially designed for the internal protection of engines and certain machines during storage, shipment, or periods of laying-up.

The Company's Lubricants Department also has available a thoroughly comprehensive book on the whole subject of corrosion, entitled *Corrosion and Temporary Protectives*.

Smith & Nephew Ltd, Bessemer Road, Welwyn Garden City.

Lasso pvc protection tape, mainly used for the protection of joints in pipelines carrying oil, water, gas, and electric cables above or below the ground. Has been found extremely valuable for protection against corrosion. Can be applied by hand or by means of the Lasso "Rap-o-Pipe" machine.

J. Stone & Co. (Charlton) Ltd, London, S.E.7.

Superston a newly-developed range of copper-manganese-aluminium alloys of high strength and hardness which withstand corrosion fatigue, cavitation erosion, impingement, abrasion, and wear. For employment in casting, forgings, welding, rolled plate, bars, and wire, in the oil, chemical, marine, and electrical industries.

Tretol Ltd, Tretol House, The Hyde, London, N.W.9.

Protective coating systems for a multitude of applications including protection of metals in chemical environments and metals under heavy chemical attack (such as chemical tanks, sewage, etc), protection against atmospheric conditions, heat resistance, painting of cement, concrete, and other building surfaces, protection for surfaces exposed to radio-activity requiring periodic decontamination, and decoration of surfaces.

In particular, *Tretol Coal Tar Epoxy* 177 has outstanding resistance to chemical attack by acids or alkalis, sea water, sour crude oil, motor spirit, diesel oil, sewage, brine solution, etc. Its use is of particular importance for pipelines, petroleum storage tanks, oil tankers, chemical storage tanks, etc.

Wailes Dove Bitumastic Ltd, Hebburn, Co. Durham.

Specialists in the production of hot enamels for the protection of pipelines. The Company also manufactures a range of coloured solutions for general maintenance work: *Bituros* non-contaminating preparations for lining the internal surfaces of potable water tanks, water transmission lines; *Bituplastic* for waterproofing and repairing roofs, etc; *Super Service Black* and *Bitumastic No.* 50, two heavy-duty coatings for protecting steel surfaces against industrial fumes, salt atmospheres, etc; and *Epimastic*, a new bituminous epoxy coating, resisting acids, alkalis, oils, greases, solvents, hot water, etc, and possessing a high degree of adhesion and resistance to mechanical damage.

Yorkshire Imperial Metals Ltd, P.O. Box 166, Leeds.

Manufacturers of copper, copper-base alloy, bi-metal, and plastic plates, tubes, and fittings for steam condensers, heat exchangers, coolers, etc. *Yorcalbro* aluminium-brass tubes have, in particular, become well known in the petroleum and allied industries for heat exchange equipment using clean sea or estuarine cooling waters which are free from silt.

* * *

Her Majesty's Birthday Honours

Appointments and awards made by Her Majesty and of interest to the petroleum industry are:—

C.B.E.

C. A. Maxwell-Lefroy, general manager, The Burmah Oil Co. (Burma Trading) Ltd, and chairman of the Burma Oil Co. (1954) Ltd, Rangoon.

A. C. Monkhouse, lately deputy director, Warren Spring Laboratory, DSIR.

M.B.E.

G. Reid, JP, lately works manager, Scottish Oils Ltd, Uphall.

S. J. Treen, assistant manager, Distribution Department, Shell-Mex and B.P. Ltd.

B.E.M.

F. M. Woodford, pumpman, *Esso Cheyenne*, Esso Petroleum Co. Ltd, Southampton.

Notes of the Month

Revision of Lebanese Oil Transit Payments

A joint press release by the Lebanese Government and the Iraq Petroleum Company Ltd reads:

"Negotiations between the Lebanese Government and the Iraq Petroleum Company have been successfully concluded following a series of detailed discussions which have taken place during the past few weeks.

"The Company's managing director, G. H. Herridge, came to Beirut from London at the request of the Lebanese Prime Minister and brought with him four other Company representatives. A series of meetings was held between a team of six Government experts and a similar number of Company representatives. During these negotiations three separate agreements were drawn up, dealing with the transit of crude oil in pipelines across Lebanon, with the loading of crude oil on to ships at the Tripoli terminal, and with the Tripoli refinery.

"The total payments to be made by the Company after ratification of the three agreements in respect of the Tripoli refinery and the transit and loading of 7½ million tons of oil annually, amount to £1,235,000 sterling (equivalent to approximately 11 million Lebanese pounds per annum). This compares with approximately 3,250,000 Lebanese pounds a year paid by the Company under the terms hitherto in force.

"The Agreements include the following additional important provisions.

(*a*) When the agreements are ratified the Government will receive from the Company a lump sum of £5,818,000 sterling (equivalent to approximately 51,500,000 Lebanese pounds) in settlement of all claims by the Government on the Company for the past, including claims in respect of transit dues from 1952.

(*b*) 20 per cent of all supplies of products issued from Tripoli refinery for consumption in Lebanon will be available to Lebanese marketers nominated by the Government.

(*c*) The Company has undertaken to provide the money for the establishment of a technical trade school in Tripoli.

(*d*) The Company has also undertaken to provide a sum of £35,000 sterling annually, to be distributed among municipalities in which the Company is operating."

Esso Standard Operations in Libya

Completion of a wildcat oil well producing 17,500 brl/day in Libya's Cyrenaica province has been announced by Esso Standard (Libya) Inc, exploration and producing affiliate of Standard Oil Company (New Jersey). This discovery opens a new area of Cyrenaica for further exploration and development. Discovery of the well, Zelten No. 1 was announced on 14 April, after the Company had drilled three dry wildcat wells on its Concession No. 6. The well is located about 100 miles from the Mediterranean coast and 200 miles south of Benghazi. Esso Libya has advised the Libyan government of plans to bring in another drilling rig to further delineate the Zelten discovery.

The well was brought in and tested for 12 hours on 11 June. Production is from a limestone section between the depth of 5460–5665 feet. The oil is of 37° API gravity.

Esso Libya has also been drilling on another concession in the south of Fezzan province, near the Algerian border, where numerous oil shows, plus a non-commercial oil and gas well, were found last year. To date, ten wells have been drilled in the Fezzan without commercial success, and the eleventh, El Hadt No. 1, is currently drilling.

Esso Standard (Libya) Inc was formed to explore for oil in Libya in April 1955, shortly before the Libyan Petroleum Law was published. With the publication of the law, which made attractive the exploration of this largely desert country, Esso Libya applied for and was granted a total of nine concessions in the three Libyan provinces of Cyrenaica, Tripolitania, and Fezzan. These concessions cover about 25 million acres and were acquired in 1955 and 1956.

Esso Libya's first exploration work was performed by two surface geological parties, which commenced work with the incorporation of the company in April 1955. In 1956 two more parties were added. All four parties are still actively engaged in geological work.

In 1956 gravity parties under contract to Esso Standard (Libya) entered the country to begin preliminary geophysical exploration. Robert H. Ray Company was the contractor for this work, directed by Esso Libya representatives.

This phase of exploration covered concession areas in Cyrenaica and elsewhere. In Cyrenaica and Tripolitania, the coastal provinces, exploration was complicated by thousands of uncharted and hidden mine fields left by Allied and Axis armies during the second world war. Mine detector crews have been constantly at work in Cyrenaica and Tripolitania to clear roadways for bringing in trucks, housing, and equipment. Careful training and the hiring of demolition experts have made it possible to operate without casualites from this always potentially dangerous source.

Following the hiring of the Robert Ray crews, Esso Libya, in 1957, employed United Geophysical Corporation and Geophysical Service International to perform geophysical exploration work on a number of the company's concessions. In 1958, The Carter Oil Company, Jersey Standard affiliate in Tulsa, outfitted and despatched from the United States a fully staffed and equipped geophysical party for Esso Libya.

Esso Libya has spent about $25 million to date in its efforts to find oil in Libya, while other United States, British, Dutch, French, and German companies have spent an estimated $150 million looking for oil, with varying degrees of success. The money spent in Libya by the oil companies has been most useful to the country which achieved its independence only late in 1951 and whose economy was, under Italian occupation and subsequent United Nations aegis, largely agricultural.

Petrofina Report

The year 1958, says the report of Petrofina SA, was a difficult one for the industry. Apart from other ills upon which the industry has less of a control, the reasons are ascribed, in a much larger degree, to the policy of looking for the short-term advantage. The margin between the prices of crude and products was further reduced, and the local competition in the consuming markets was said to be keener, with little regard to the cost of the products.

It is said that this was partly ameliorated by the reduction of stocks in the U.S.A. which was brought about by the restrictions on production and imports there. This, together with the general economic revival, and the consequent

increase in product demand, made possible a recovery of prices.

Some extremely thought-provoking comments on the present state of energy demand and the competition between the various energy forms, are made. It is said that "the competition of fuel oil with coal, which has occurred in many countries, is quite unjustifiable. The prices at which fuel oil has been, and is still being, sold in certain European markets, result in the oil companies sustaining losses out of all proportion to the possible increase of their outlets." It is asserted that this policy provokes the natural reaction from governments and the coal industry. To sell below cost was always a bad practice, but its consequences were particularly harmful in the "quite unjustified fight between fuel oil and coal." In Europe, fuel oil could not be regarded as a residual product as it represented the greater part of oil consumed, and that it was anticipated that this would be accentuated in the future. "It is impossible to imagine how the European refineries could cover their costs if they had to incur heavy losses on the greater part of their production."

Despite the unfavourable tenor of the markets, sales of the group companies increased by 42 per cent over the previous year, chiefly through development of new markets and the acquisition of existing companies.

Capital expenditure of the Group, which had been a budgeted 5000 million Belgian francs, was reduced to about 4000 million. The budget for 1959 is about 4500 million.

In order to achieve standardization, the trade-mark *Purfina*, under which products are sold in continental Europe, is gradually being replaced by the trade-mark *Fina*, used in Anglo-Saxon countries.

Sales of the Group, and affiliated companies, reached the equivalent of 10·3 million tons, which included 2·5 million tons of crude, 7·2 million tons of finished products, and 19,000 million cu ft of gas.

In the U.S.A., the acquisition of the assets of Petro-Atlas considerably increased the reserves and production of American Petrofina.

Restrictions on Canadian production penalized the Company's Alberta fields particularly and because of this, in spite of an increase in reserves, production fell by 26 per cent.

In Mexico, Mexofina was amalgamated with Pauley Petroleum Inc, whose activities extend also to the U.S.A. and the Middle East. The production in Egypt of the Compagnie Orientale des Pétroles d'Egypt, in which the Group have a large interest, reached 1·8 million tons in 1958, compared with 760,000 in the previous year.

In Angola, work began in April, and a discovery was made at Cacuaco, the importance of which cannot yet be estimated.

The Group's refining capacity was increased by 1·5 million tons to 7·5 million tons. Catalytic reforming and desulphurization units were put into operation at the SIBP–BP refinery at Antwerp, and a capacity increase to 1·5 million tons was achieved at the Montreal refinery. Unit extensions were completed at the Mount Pleasant and Eldorado plants in the U.S.A. whilst the Duisburg refinery in Germany is expected to be completed in the last quarter of 1959.

Khanaqin Transfers its Marketing

The Khanaqin Oil Company Ltd, a subsidiary of The British Petroleum Company, which relinquished its exploration and production rights in north-east Iraq on 30 November 1958, transferred to the Government of Iraq on 30 June last, the marketing operations which it has carried out on behalf of the Government Board of Oil Affairs since December 1951.

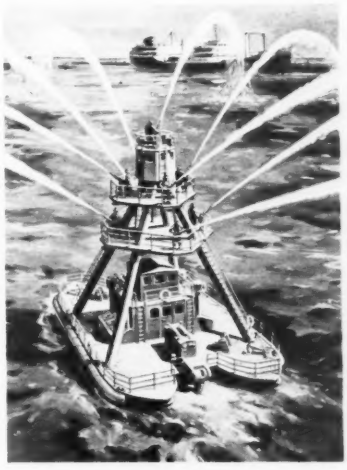
The Khanaqin Oil Company Ltd is continuing to operate the BP aviation service for the refuelling of aircraft within Iraq and to market certain speciality oil products.

A Unique Fire-Float

A unique fire-fighting float will be on call to deal with any fires in Swansea harbour later this year. It is being built in Wales for the BP Tanker Company, by whom it was designed.

The main features of this craft are two pontoons each 60 feet long and 14 feet wide, and spaced eight feet apart.

The pontoons are surmounted by four tubular supports which form a tower on which two platforms and a control cabin are mounted. Fitted on the platforms and the top of the cabin are nine fire-fighting nozzles capable of spraying water or foam, and so arranged that seven can be used in any one direction simultaneously. A firemaster in the top cabin can maintain contact with the man at each nozzle and the helmsman by a loud-hailer system.



The fire-float is self-propelled by two diesel units mounted between the pontoons. The propellers can be turned to act as rudders, enabling the fire-float to move in any direction, whilst the engines will maintain the vessel in position against the force of the water jets.

Socony Mobil's Operation

World-wide crude oil production, refinery throughput, and marketing operations of the Socony Mobil Oil Co. Inc reached record levels in the first quarter of 1959.

Gross crude oil production was at a rate of 757,000 bd, a 5 per cent increase on the corresponding quarter of 1958; refinery runs were 953,000 bd (13 per cent increase); and global sales of products reached 1,157,000 bd (10 per cent increase).

The president of the Company, A. L. Nickerson, said that the problems of oversupply, increasing costs, and government relations, continued to affect the oil industry around the world. The eagerness of oil finders and developers to produce their oil had had a depressing effect on oil prices in free world markets.

Nevertheless, the problem of over-abundance had to be considered together with the fact that the free world could be cut off from one or more of the sources of Middle East oil reserves. Therefore it seemed prudent and desirable "that oil men find alternative reserves".

It was largely for this reason that Socony Mobil spent more than $40 million in 1958 on foreign exploration.

Gulf Oil Corporation in 1958

In spite of the adverse economic conditions experienced in 1958, Gulf Oil Corporation's results in that year were said to be relatively satisfactory. Whilst lower prices in oil markets interrupted the recent trend of rising earnings, a combination of lower capital expenditures, rigid cost-control, and larger volume, created an improved working capital position, and a reduction in long-term debt by the end of the year.

Net income was $329 million, compared with $354 million in 1957. In phase with the business recession, capital expenditures were cut by $145 million in 1958 to a figure of $401 million. Taxes—an increasing burden—accounted for nearly $638 million of payments to various governmental agencies—over eight times as much as the shareholders received, and nearly three times as much as the money retained for reinvestment in the business. Total assets in 1958 were $3430 million, a rise of $190 million on the preceding year.

Crude oil production by Gulf companies throughout the world was 1,262,635 bd in 1958, compared to 1,117,300 bd in 1957. The U.S. share of this fell from 322,929 to 316,886 bd. This was a result of depressed economic conditions and lower Texas allowables. The amount of crude oil processed in 1958 rose by 15,918 bd to 698,133 bd, although the contribution of the U.S. sector of Gulf's operations dropped from 536,215 to 485,034 bd.

Exploration and development activities were maintained at levels higher than for any year prior to 1957. In the U.S.A. the drilling programme, as before, was concentrated largely in West Texas and Coastal Louisiana. Several major extensions in productive areas resulted.

In Canada a well was completed at Berland River, 160 miles north-west of Edmonton, which is potentially the largest individual gas producer in the world. In addition, a discovery well in the Swan Hills area appears to be the largest oil producer to date in this prolific area of Alberta.

Exploratory activities were also under way in the Caribbean area, Bolivia, Paraguay, Sicily, Libya, East Africa, and Turkey.

A major accomplishment in 1958 was the completion of the 703-mile, 16-inch crude pipeline of the Four Corners Pipe Line Company. This line, in which Gulf has a 20 per cent interest, extends from the Four Corners district of the South-West to the Los Angeles area.

In the sphere of refining, new catalytic reforming units were added at the Philadelphia and Port Arthur refineries. The 20,000 bd plant at Port Moody, British Columbia, was completed, and a catalytic reforming unit went into operation at Moose Jaw, Saskatchewan.

Work was begun in 1958 to increase the capacity of the Puerto la Cruz refinery of Venezuela Gulf Refining Company by 60,000 bd. Completion is scheduled for the autumn of 1959.

The world-wide tanker fleet owned, leased, and chartered by Gulf totalled 105 vessels of 2,616,000 dw tons aggregate, a 14 per cent increase over the previous year.

Shell Group Purchases in the U.K. in 1958

Business to a total value of £39 million was placed with British industry during 1958 by the Royal Dutch/Shell group of companies. This excludes the many millions of pounds spent on tanker construction, on the repair and victualling of the Shell tanker fleet, and on certain purchases for the chemical side of the business.

Compared with 1957, purchases for export declined from £38 million to £26·5 million, but, on the other hand, purchases for U.K. refineries and research establishments increased from £12 million to £12·5 million last year.

The distribution of the business was widely spread over some 3000 suppliers, five of whom each received orders of over £1 million in value, and another 54 orders of over £100,000.

£10 million of the total was spent on such purchases as bulk chemicals and catalysts for refinery use. Other major items were tanks and steel structures (£3 million), electrical equipment (£3 million), drums and tinplate (£4 million), and tubulars (£3 million).

Actual shipments to oversea destinations during 1958 were valued at £30 million—representing about 1 per cent by value of total exports from the U.K. and involving some 61,000 separate consignments. Getting all these materials to points of use involved payment of £2·2 million in freight to British ship-owners and airlines.

British Oil Burner Manufacturers Association Meeting

The Annual General Meeting of the British Oil Burner Manufacturers Association Ltd was held at The Trocadero Restaurant, London, on 6 May, when J. D. FitzGerald, managing director of Combustions Ltd, was elected president of the Association.

Other officers elected were:—vice presidents: W. C. J. Mollison (Todd Oil Burners Ltd), A. M. Wood (The Wallsend Slipway & Engineering Co. Ltd), technical adviser: R. H. G. Sutton (Urquhart's (1926) Ltd). H. F. C. Newsom (Nu-Way Heating Plants Ltd) and P. A. Martin (Quiet May Oil Burner Ltd) were re-elected to the Council and the following additional Council members were also elected:—J. R. Ball (Watts Automatic Boilers), E. G. Brooks (Thomas Potterton Ltd), R. L. Cox (G. N. Haden & Sons Ltd), K. R. Green (Stonebridge Electrical Co. Ltd), W. G. Myatt (Brockhouse Heater Co. Ltd), R. W. Towers (Rheostatic Co. Ltd), and A. K. Waugh (A. K. Waugh Ltd).

At the luncheon which followed the meeting, W. A. Hubbard, immediate past-president, proposed the Toast of the guests of the Association, coupled with the name of the president of the Institute of Fuel.

Mr Hubbard mentioned that for the first time at this function the Association had the pleasure of welcoming the presidents of the three technical institutions with whom they worked in close collaboration, namely C. M. Vignoles, C.B.E., president of the Institute of Petroleum, H. C. Jamieson, president of the Institution of Heating and Ventilating Engineers, and T. C. Bailey, president of the Institute of Fuel.

Capacity Increases at Poplar Fuel Oil Terminal

After less than a year's operation at Poplar fuel oil terminal, Charrington, Gardner, Locket & Co. Ltd announce that work is in progress which will double its capacity. At present it has storage for 4,160,000 gallons of fuel oil. The new tanks, now being erected at a cost of £120,000, will provide for an additional 4,590,000 gallons.

Charrington have found that Poplar terminal, by virtue of its central riverside position, has greatly simlipfied distribution of fuel oil to the London area, and has reduced their operating costs.

The main contractors for these extensions are Whessoe Ltd, of London, and work is expected to be completed by September.

Rig Movement in Assam

The movement of drilling rigs from one location to another has been speeded up considerably recently by the Assam Oil Company drillers and engineers in the Nahorkatiya and Moran oil areas.

The moving of a modern drilling rig from one location to another is an operation demanding skill and co-ordination in the dismantling, transportation, and re-erection of some 550 tons of equipment. In all, there are some 100 lorry loads of equipment, apart from the boilers, which weigh over 25 tons each, which are moved on individual wheeled trailers specially made for this job.

A typical move, which took place in the Nahorkatiya area and involved moving equipment by road a distance of 9½ miles, took 16 days to complete. The most time-consuming jobs, the dismantling and the erection of the lattice type derrick, each took four days.

Time spent in moving a drilling rig is time lost from a productivity point of view, and with this in mind, the Company has given considerable thought to reducing this lost time as much as possible. This has been done by providing additional derricks and equipment that can be installed at the new site ahead of the main rig move; and combining smaller units of equipment into larger packaged units so that less time and transport is required for moving them. An example of this, is the assembly of all portable generating equipment into packaged units, each consisting of two diesel generating sets complete with switch gear, etc., inside a portable house.

By methods such as these, rig moves towards the end of 1958 were being made at Nahorkatiya in six days, a considerable reduction over earlier times.

Patent for USBM Gas-Purification Process

The U.S. Department of the Interior has announced issuance to the Federal Government of a patent covering an improved method developed by the Bureau of Mines for purifying certain industrial gases.

The new method, offering substantial savings to makers of synthetic ammonia, chemicals, and other products, already is being used commercially by plants that were granted licences under the Department's regulations pending patent application.

The Bureau method employs a hot, concentrated, solution of potassium carbonate to absorb impurities from synthesis gas, which can be a mixture of either carbon monoxide and hydrogen or nitrogen and hydrogen.

Unwanted carbon dioxide and sulphur-bearing gases are removed from synthesis gas at pressures up to 600 psi which are common in industrial practice. The carbonate solution can be used again after it has been depressurized and stripped of the absorbed impurities.

Stripping is done at approximately the same temperatures used in the absorption step, eliminating the need for costly heat exchangers required in conventional processes, and also reducing the amount of steam consumed.

"Status Quo" for the Patent System

In a talk before the American Institute of Chemical Engineers' meeting in Kansas City recently, W. C. Asbury, vice-president of Esso Research and Engineering Co. declared: "If confidence in the patent system is lost—or if the system is abolished as some people have advocated—there could be a return to the ancient system of protecting information by secrecy. Under the present system, people who do research feel freer to publish the results of their work if they can rely on patents for protection. The significant result, therefore, has been wide dissemination of technical and scientific knowledge and great technological progress."

Mr Asbury, who is in charge of legal, licensing, and information activities of his company, estimated there are now some 100 oil refining processes available under licence to refiners throughout the free world. He attributed this broad availability largely to the oil industry's practice of making its technical knowledge available to others through licensing arrangements.

The voluntary licensing system had worked well over the years. Legislative attempts to make licensing compulsory would, to a certain extent, have the same effect as abolishing the patent system, and lead to some sort of regulation of royalty rates. This would result in an incentive for industry to keep its inventions secret rather than to patent them at all.

The basic reasons for process licensing in the oil industry include the realization that in general the major research goals of various petroleum companies were the same: better processes for better fuels and lubricants. Also of importance is the fact that when research results could be protected by patents, there was a natural incentive to offset some of the cost (usually a small portion) of doing the research by licensing for royalties at competitive rates. The oil industry spent about $300 million last year on research, and that competition in all phases of the industry—especially in research—was keener than ever and it appeared it would continue in the future.

Formation of European Chemical Manufacturers Body

For a number of years the directors of the associations of chemical manufacturers in Western Europe have met periodically to examine together questions of common interest.

In view of the number and scope of the problems facing the chemical industries of these countries at the present time, the Austrian, Belgian, British, Dutch, French, German, Italian, Swedish, and Swiss chemical manufacturers associations have decided to improve their collaboration and contacts by setting up a Centre Européen des Federations de l'Industrie Chimique (CEFIC), the secretarial services of which are entrusted to the Swiss association in Zurich.

CEFIC is a working agency of the directors and will be responsible for organizing their meetings and for the exchange of information. Contact with the Centre will be solely through the directors of the member countries.

Changes in RN Titles

New titles have been given to the heads of the Engineering, Electrical, and Supply and Secretariat Specializations of the General List of naval officers.

The old titles—Engineer-in-Chief of the Fleet, Director of the Naval Electrical Department, and Director General Supply and Secretariat Branch—have been replaced by Chief Naval Engineer Officer, Chief Naval Electrical Officer, and Chief Supply and Secretariat Officer.

At present, the Chief Naval Engineer Officer is Vice Admiral N. E. Dalton, C.B., O.B.E., serving as Director General of Training; the Chief Naval Supply and Secretariat Officer is Vice Admiral H. P. Koelle, C.B., serving as Deputy Chief of Supplies and Transport; and the Chief Naval Electrical Officer is Rear Admiral K. R. Buckley, serving as Director of Engineering and Electrical Training.

THE TRIPARTITE NAVAL CONFERENCE ON FUELS AND LUBRICANTS

Since 1952 the Royal Navy, the Royal Canadian Navy, and the U.S. Navy have participated, approximately biennially, in conferences concerned with problems of the use of fuels and lubricants in naval affairs. Each navy is represented by serving officers, personnel from testing and research laboratories, and the industrial advisers, the latter being technologists from the leading oil suppliers of the countries. Held in each country in turn, recent meetings were Washington (1955), Ottawa (1957), and London (1959). These pictures were taken at a reception given by the Institute during the 1959 meeting.

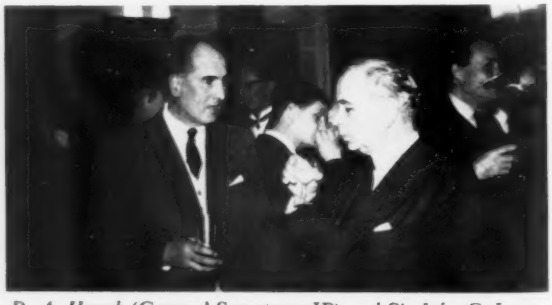
C. M. Vignoles, C.B.E. (President of the Institute) *discusses a point with* (left) *L. F. Whitfield* (Imperial Oil Ltd, Canada)

The Canadian delegation: B. Rabnett (Shell Oil Co. of Canada Ltd), *R. G. Grimsey, R.C.N., and Lieut-Cdr (E) L. H. Clark, R.C.N.* (Engineer-in-Chief, Naval H.Q.), *R. M. Sinclair* (British American Oil Co.), *Dr R. B. Whyte* (National Research Council), *and L. F. Whitfield* (Imperial Oil Ltd)

C. W. Hoffman (Mobil International Oil Co. New York), *R. S. Teale, and H. F. King* (U.S. Navy Engineering Experimental Station, Annapolis)

Lieut-Cdr P. F. Martin, R.N., Cdr J. A. Coil, U.S.N., G. L. Neeley (Standard Oil Co. of California), *and T. L. Cantrell* (Gulf Research and Development Co.

G. H. Thornley (C. C. Wakefield & Co. Ltd), *Captain W. R. Stewart, R.N., and Commander H. D. Nixon, M.V.O., R.N.*



D. A. Hough (General Secretary, IP) *and Sir John G. Lang, G.C.B.* (Permanent Secretary to the Admiralty)

Europe's First 100,000-ton Tanker Terminal

A view of the new Finnart Terminal

The first terminal in Europe capable of berthing at any time fully-loaded oil tankers of 100,000 dw tons or more, was officially opened on 9 June at Finnart, Loch Long, in a setting of outstanding beauty.

The ceremony was performed by Vice-Admiral J. D. Luce, C.B., D.S.O., O.B.E., Flag Officer, Scotland, in the presence of Sir Neville Gass, K.B.E., M.C., chairman of The British Petroleum Co. Ltd, and many guests.

The terminal and jetty are an extension of the existing installation which has been in operation since 1951. The new jetty with the associated storage tanks, which in all cost about £2 million and occupy an area about 1000 yards long and 300 yards wide, are about half-a-mile south of the earlier installation in an area of Loch Long.

The four new tanks have been erected on the steeply sloping banks of the loch and required the excavation of a considerable quantity of earth and rock which was then used to form bunds around them, and for road and pipe-track formation. Provision has been made for the erection in the future of two additional tanks.

The jetty steel piles, ranging in length from 28 to 112 feet, and driven down to depths of 25 feet into the bed of the loch, carry the concrete decking of the new jetty. The 330-feet long jetty head, 180 feet from the edge of the loch, allows a minimum depth of 55 feet at low water, enough to accommodate any of the biggest tankers with ease.

Connecting the jetty with the new storage tanks and the existing four tanks are two 24-inch pipelines, allowing a tanker to discharge up to 6000 tons of crude oil an hour. The main valves at the tanks are power-operated by remote control and there is remote indication of the level of oil in the tanks.

Fuel or diesel oil for bunkers is piped to the head of the new jetty through a new pump-house from the tanks allocated for this purpose in the earlier installation. Two motor-driven pumps, each with a capacity of 250 tons/hr, are used for this. In the same pump-house a motor-driven pump of 1000 gal/min capacity, is installed to circulate the stored crude oil through heaters, thereby avoiding the depositing of sludge in the main crude oil tanks.

In the design of the terminal the Company has taken great care over three points—the prevention of pollution in the loch, fire precautions, and the amenities of the area.

Special steps have been taken to seal off the whole of the storage area to prevent seepage of any oil through underlying fissured rock to Loch Long. This involved the surfacing of all horizontal and sloping surface areas around the tanks with a concrete membrane constructed with special sealing joints. Drainage water and that from other possible contaminated sources discharges into an oil-water separator system.

The hose gantry on the jetty carries a fire-fighting monitor on either end and a further monitor tower is installed at each end of the jetty head. Buildings at both ends of the installation house four centrifugal pumps, each with a capacity of 1000 gallons of water a minute for fire-fighting purposes.

A screen of trees and shrubs hides the installation from the main road, and from the shore the high grass bund walls conceal the storage tanks which are camouflaged in brown and green, thereby blending effectively into the background of the hillside. The result is so effective that there is no despoilation of a natural beauty spot.

Contractors for the project were Wimpeys for onshore facilities, Melville Dundas and Whitson for the jetty itself, and Rendel, Palmer, and Tritton were the consulting engineers.

Sir Neville Gass referred at the ceremony to the growth in the size of tankers, which had caused the Finnart terminal to be built. He reminded the guests that the Grangemouth refinery, on the Firth of Forth, had been built when 12,000 tonners were the vogue. Later, when much larger vessels came into service, Grangemouth could not take them without much costly dredging. Terminal facilities had to be moved to the deep and sheltered waters of Loch Long, which was then joined by a 57-mile pipeline to the refinery across the neck of Scotland, and opened eight years ago. With the advent of larger tankers of 60,000–100,000 tons much larger berthing capacities were required, and the pipeline and refinery capacity we e increased by one million tons.

The chairman also spoke of the Company's long association with Scotland through Dr James Young and the large part that Scots had played in the history of BP. He said that, moreover, there could be no more appropriate sponsor than the Flag Officer, Scotland, whose brother, Sir William Luce, was the Governor of Aden, where the Company had important refinery and bunkering installations.

During the ceremony the tanker *British Duchess*, the 42,000-dwt flagship of the BP fleet, berthed at the new jetty. She had come from Kuwait with a cargo of crude oil, and was dressed over-all for the occasion. The flagship was the thousandth tanker to berth at Finnart since its original terminal came into operation. During that time nearly 4200 million gallons of crude oil had been pumped into the underground pipeline connecting it with Grangemouth refinery.

Lectures, Courses, and Conferences

International Combustion Symposium

The Eighth International Symposium on Combustion will be held on 29 August–2 September 1960, at the California Institute of Technology. It will be the third of the symposia organized under the auspices of The Combustion Institute. The agenda of the Symposium, which will be concerned with "Fundamental Combustion Problems in Propulsion" will cover the various aspects of kinetics, combustion of solids, combustion of sprays, ionized gases, and radiant heat transfer.

Notification of intention to submit papers should be made as soon as possible. Titles of papers, complete abstracts, and complete papers, all of which should be in triplicate, should be sent not later than 1 December 1959, 1 January 1960, and 1 February 1960, respectively. The relevant address is Dr S. S. Penner, Chairman Papers Sub-Committee, Eighth International Combustion Symposium, California Institute of Technology, Pasadena, California.

Stanlow Safety Conference

Stanlow Oil Managers Association will hold a third one-day Safety Conference on 27 October 1959. The venue will be as for the second of these conferences (cf *I. P. Rev.* 1957, **11**, 338) *ie* Mollington Banastre Hotel, near Chester. Three papers will be given, dealing with General Safety and Accident Prevention; Fire Prevention and Explosion Hazards (with particular reference to static electricity); and Industrial Hygiene. Accommodation is limited and interested employees of firms represented on SOMA should make further enquiries through their companies.

"The Health of Business Executives"

On 20 November 1959 a one-day conference on "The Health of Business Executives" is to be held in the Royal Festival Hall, London.

The conference, which is organized by the Chest and Heart Association, will consist of lectures on such subjects as, "Stress and Responsibility", "Overwork and Fatigue", "Overweight and Diet", "Business Travel", and others, given by eminent members of the medical profession.

Applications for tickets, which cost 4 guineas, and include luncheon and tea, can be obtained from The Chest and Heart Association, Tavistock House North, Tavistock Square, London, W.C.1.

Course on River Pollution

The University of Birmingham, Departments of Engineering and Extra-Mural Studies, are holding a course on "River Pollution, Sewage Disposal and Trade Waste Treatment", in co-operation with the Institute of Sewage Purification. It will occupy two separate weeks—4-8 January, and 4-8 April 1960.

The total cost for the fortnight's course is 14 guineas, which includes all laboratory fees and coach fares for visits. Early application by intending students is recommended as attendance will be restricted, and should be made to Director of Extra-Mural Studies, The University, Edmund Street, Birmingham 3.

Institute of Physics' Conference

Details of The Institute of Physics' Conference on "Some aspects of magnetism", and forms of application to attend it, are now available from the Secretary of the Institute at 47 Belgrave Square, London, S.W.1. The Conference will take place in Sheffield from 22-24 September 1959.

If accommodation in one of the University Halls is desired, early application is advisable.

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MIDDLE EAST OIL PRODUCTION

	May	*Jan.–May*
	Tons	
Iraq Petroleum Co. Ltd ...	2,193,786	10,392,790
Basrah Petroleum Co. Ltd ...	974,472	5,077,211
Mosul Petroleum Co. Ltd ...	107,563	534,624
Qatar Petroleum Co. Ltd ...	668,902	3,317,851
Iraanse Exploratie en Productie Mij	4,022,000	17,914,000
Kuwait Oil Co. Ltd	6,063,524	29,181,953
	Barrels	
Arabian American Oil Co. (Saudi Arabia)	32,612,671	161,801,645
Bahrain Petroleum Co. Ltd...	1,395,654	6,819,871

The refinery throughput at Abadan of the Iraanse Aardolie Raffinage Mij for May was 1,261,000 tons, the total for 1 January to 31 May being 6,150,000 tons.

Crude processed at Aramco's Ras Tanura refinery during May was 4,999,746 brl, the total for 1 January to 31 May being 26,217,808 brl.

Oil deliveries from Sidon, Lebanon, by Trans-Arabian Pipeline Co. in May were 9,828,744 brl, the total for 1 January to 31 May being 56,441,608 brl.

Banias, the Syrian terminal of the IPC's 30-inch pipeline from Kirkuk, exported its 100-millionth ton in May. Since 1952, when this 555-mile pipeline was completed, more than 5000 tankers have loaded oil at the terminal.

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U.K. CONSUMPTION OF PETROLEUM PRODUCTS

Deliveries of petroleum products (excluding bunkers) for consumption in the United Kingdom during the period January to March 1959 totalled 9,222,439 tons, an increase of 1,518,921 tons over the corresponding quarter of 1958, according to figures published by the Petroleum Information Bureau on behalf of the U.K. Petroleum Industry Advisory Committee.

This, a quite spectacular increase in consumption, was particularly evident in the categories of burning oil, gas/diesel oil, propane and butane (48 per cent), and fuel oil (38 per cent). The "other products" category also showed a considerable rise.

The only products to register decreases in use were again aviation fuels, vaporizing oil, white spirit, and paraffin wax and scale.

Full details are given in the following table:—

U.K. Deliveries into Inland Consumption of Petroleum Products*

Products	January to March	
	1958	1959
	tons	*tons*
Aviation fuels	384,374	311,177
Motor spirit (incl. motor benzole)		
Premier grades	759,505	882,944
Standard grades	635,701	608,660
	1,395,206	1,491,604
Industrial spirits (incl. industrial benzole)	46,880	48,487
White spirit	37,034	35,583
Kerosine:		
Burning oil	464,004	543,305
Vaporizing oil	89,256	86,708
	553,260	630,013
Derv fuel	488,173	518,682
Gas, diesel, and fuel oils:		
Gas/diesel oil	835,039	889,480
Fuel oil	2,740,443	3,798,064
Refinery consumption ...	579,951	745,582
	4,155,433	5,433,126
Lubricating oils and greases ...	205,792	207,432
Paraffin wax and scale	13,889	12,890
Propane and butane	19,948	29,472
Bitumen	181,113	190,370
Other products	222,416	313,603
	7,703,518	9,222,439

* Deliveries for ships engaged in the foreign trade are not included.

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SCOTTISH CONSUMPTION OF PETROLEUM PRODUCTS

Consumption of petroleum products (excluding bunkers) in Scotland during the year 1958 rose to 2,750,072 tons—an increase of 338,735 tons over 1957—according to statistics issued by the U.K. Petroleum Industry Advisory Committee.

It should be remembered, of course, that in 1957 there were four months of fuel rationing and restrictions.

Increases were registered for motor spirit (including motor benzole), industrial spirits (including industrial benzole), burning oil, derv fuel, gas/diesel oil, fuel oil, paraffin wax and scale, petroleum gases, and unspecified products.

Consumption of aviation fuels, white spirit, vaporizing oil, lubricating oils and greases, and fractionally, of bitumen showed a drop on the previous year's totals. These all continue a trend evidenced a year ago. Full details are given in the table below.

The consumption figures for the first quarter of 1959, which have also just been released, total 740,049 tons—an increase of 84,565 tons over the corresponding period of 1958.

The only categories of products to drop in consumption were white spirit (by a small amount), vaporizing oil, lubricating oils and greases, and paraffin wax and scale.

Motor spirit, burning oil, and gas, diesel, and fuel oils, all continued to show large increases in use, as also did bitumen and aviation fuels (the latter by 78 per cent), which have both dropped in previous Scottish consumption statistics.

Scottish Deliveries into Inland Consumption of Petroleum Products

Products	January to December	
	1957	1958
	tons	*tons*
Aviation fuels	139,834	134,600
Motor spirit (incl. motor benzole)		
Premier grades	237,158	299,269
Standard grades	229,454	228,720
	466,612	527,989
Industrial spirits (incl. industrial benzole)	34,409	39,639
White spirit	10,614	8,027
Kerosine		
Burning oil	55,934	75,251
Vaporizing oil	57,417	45,306
	113,351	120,557
Derv fuel	208,851	237,174
Gas, diesel, and fuel oils		
Gas/diesel oil	251,309	313,782
Fuel oil	512,157	634,035
Refinery consumption ...	218,484	254,378
	981,950	1,202,195
Lubricating oils and greases ...	72,337	71,964
Paraffin wax and scale	1,540	3,676
Petroleum gases...	9,277	11,445
Bitumen	151,239	151,091
Other products	221,323	241,715
	2,411,337	2,750,072

Products	January to March	
	1958	1959
	tons	*tons*
Aviation fuels	24,222	43,000
Motor spirit (incl. motor benzole)		
Premier grades	53,892	62,744
Standard grades	50,858	47,346
	104,750	110,090
Industrial spirits (incl. industrial benzole)	10,870	10,988
White spirit	1,837	1,807
Kerosine		
Burning oil	31,840	33,781
Vaporizing oil	10,001	9,398
	41,841	43,179
Derv fuel	54,771	58,330
Gas, diesel, and fuel oils		
Gas/diesel oil	80,943	91,462
Fuel oil	172,006	198,675
Refinery consumption ...	63,446	71,506
	316,395	361,643
Lubricating oils and greases ...	17,285	17,093
Paraffin wax and scale	1,011	895
Petroleum gases...	2,731	2,991
Bitumen	20,615	28,112
Other products	59,156	61,921
	655,484	740,049

Books and Films

Petroleum Chemistry and Refining

The second volume in the series on Advances in Petroleum Chemistry and Refining*, edited by the late Kenneth A. Kobe and John J. McKetta, Jr, follows the lines of its predecessor and is in five main groups. Group I (Economics and Future Trends) has a chapter on raw materials for the petrochemical industry and one on trends in lubricants. The two subjects discussed in Group II (Unit Operations and Design) are pebble heaters and radiation techniques, and in Group III (Refining Processes) sulphuric acid alkylation, coking residues, and radiation processing are dealt with. Synthetic detergents and hydrazine are the subjects of Group IV (Petrochemicals), while Group V (Mechanical Equipment) is comprised of one chapter on the Houdriflow catalytic cracking process.

The authors of the various chapters are all authorities in their own field and the volume is a valuable and worthwhile one.

Phase Relations

"Phase Relations of Gas-Condensate Fluids, Correlations of Test Results and Component Properties", which is volume II of two volumes, has been issued by the American Gas Association as its Monograph 10. Its 523 pages contain 265 illustrations and 157 tables of correlations of technical data obtained over 20 years of research. Four of its chapters describe correlations of the phase diagram of gas-condensate fluids, and the remaining three deal with correlations of the compressibility factor. Techniques and apparatus are described in nine appendixes.

Published by the American Gas Association, 420 Lexington Avenue, New York 17, the price is $15.00.

Training in Industry and Commerce

Five papers on training, first given at the Polytechnic, London, in 1957, have now been revised and edited, and published together under the title *New Developments in Training*.

The booklet deals mainly with industrial and commercial aspects of training, and should be of value to businessmen who are concerned with communication and efficiency through the development of skills in organizations of any kind.

The five papers included in the publication are as follows:

"A Biologist's Contribution to Learning" by Professor J. Z. Young, F.R.S.;

"New Methods of Training in Manual Skills" by W. Douglas Seymour;

"Recent Survey Findings in the U.K. and other European Countries" by Winifred Raphael;

"Training for Executive Skills" by Frank A. Heller;

"The Integration of Training, Organization, and Policy" by David King.

The booklet is edited by Frank A. Heller, price 5*s*, and published by the Polytechnic Management Association, The Polytechnic, Regent Street, London, W.1.

Communications in Organic Chemistry

A new journal, to be published every two to four weeks, has been released by the Pergamon Press Ltd, entitled *Tetrahedron Letters*. The new publication's aim is for the *rapid publication* of communications in organic chemistry in preliminary form, and is to be an associated but distinct publication to Pergamon Press' other journal, *Tetrahedron*, which is to continue to be published as a monthly international medium for permanent contributions to organic chemistry.

Subscriptions to *Tetrahedron Letters* are £7 per annum for research institutes, libraries, and industrial organizations, whilst there is no extra charge if for the use of private subscribers to *Tetrahedron*.

Intending authors or subscribers can obtain further information from Pergamon Press Ltd, 4 & 5 Fitzroy Square, London, W.1.

"New Stoker's Manual"

The *Stoker's Manual*, prepared for the Fuel Efficiency Committee of the Ministry of Fuel and Power, was published in 1945. The changes that have taken place since that date have necessitated a complete revision of the book, and so the NIFES has produced the *New Stoker's Manual*. This covers new developments in the mechanical firing of shell boilers with coal, and now includes a section on oil firing. As the Clean Air Act is now in force, special attention is devoted to the prevention of dark smoke.

The publication is pocket-sized, and presents a copious description, in an admirably clear fashion, of the subject of the firing of boilers. It also serves as an introduction to the recognized qualification in this field—the Boiler Operator's Certificate of the City and Guilds of London Institute. Particulars of the course organized by the NIFES leading to this Certificate are given in the loose leaflet inserted in the Manual.

Servo-Controlled Milling of Cams

The March-April 1959 issue of the bi-monthly *Engineering-Science News*, published by the University of Texas, Austin, is devoted to a four-page description of the servo-controlled cam milling machines of the University's Military Physics Research Laboratory.

The facilities are described from a functional and operational standpoint, and the paper outlines some of the engineering and research problems considered during their design and construction.

"Notes for Authors"

The Institute of Physics has just published a 36-page revised edition of its booklet designed to assist less-experienced authors, and to serve as a reference booklet for all those who wish to contribute to the Institute's publications. Under its new title *Notes for Authors*, it gives hints on the preparation of scripts and diagrams, on the layout of mathematical content, the correction of proofs, and so on. In addition to a bibliography of reference books and works on technical writing, the pamphlet also contains lists of the spellings, symbols, and abbreviations used by the Institute.

Copies of this booklet are obtainable from The Institute of Physics, 47 Belgrave Square, London, S.W.1, price 3*s* 6*d*, including postage.

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* Advances in Petroleum Chemistry and Refining. Ed by K. A. Kobe and J. J. McKetta, Jr. New York and London: Interscience Publishers, 1959. Pp. 634 + xviii. 109*s*.

The Works of Dr Irving Langmuir

The complete works of the late Dr Irving Langmuir are being collected for publication in a set of six volumes, according to an announcement by Pergamon Press.

Dr Langmuir, who was associated with the General Electric Research Laboratory from 1909 until his death in 1957, was the first American industrial scientist to receive a Nobel Prize. He was widely recognized as one of the greatest and most versatile scientific geniuses of the twentieth century.

A group of 29 leading scientists from throughout the world will serve as members of the editorial advisory board for the Langmuir books. Chairman of the board will be Dr Guy Suits, General Electric vice president and director of research, who is also writing a biography of Dr Langmuir to be incorporated in the final volume of the series.

Deputy chairmen of the editorial group are Dr Peter Debye of Cornell University, and Sir Eric Rideal of the Imperial College of Science and Technology, London.

Because of the broad scope of Dr Langmuir's scientific interests, and the tremendous productivity which characterized his long career, the publishers expect that a minimum of six volumes will be required. Each volume will be devoted to one or more fields of service in which Dr Langmuir worked. It is hoped that publication of the first of the volumes can be made before the end of 1959.

"Catalyst"

A new magazine whose appeal is presumably aimed at serious readers of any type, or with any interest, has been launched by Shell Chemical Company.

Under the title of *Catalyst*, its appellation may be regarded, on the evidence of the first number, as being somewhat misleading. For although it features short articles on "Some Speculations on the Future of Polymer Chemistry", by Prof. C. E. H. Bawn, C.B.E., and "U.S. Industrial Chemical Developments", by R. G. B. Heller, it also includes such items as "Towns Tailored for Traffic", "Industry as an Art Patron", "The Post-War Passenger Stations of Europe", and "Becoming a Golfer in Middle Age". A wide and entertaining net is obviously being cast.

Catalyst is well-produced, has excellent photographs—both colour and black and white—and drawings, and in the production sense is a credit to the Company of its source.

British Standard

Insulating oil for transformers and switchgear

This 1959 revised edition of BS 148 applies to unused insulating oil, as delivered in tank wagons or drums, suitable for the immersion or filling of transformers, switchgear, and certain other electrical equipment, in which oil is required as an insulant or for heat transfer. It does not apply to high viscosity oils, to oils required for cables or capacitors, or to oils for special impregnation purposes.

Minor technical changes in the present revision include deletion of the evaporative loss test, which, in view of the adequate limitation of volatility ensured by the specified flash-point, was found to be superfluous; and the improvement of the procedures for acidity determination by the substitution of alcoholic alkali for aqueous alkali.

A new Appendix has been introduced giving the characteristics of the thermometers used in the various tests.

Copies may be obtained from the BSI, 2 Park Street, London, W.1., price 8*s* 6*d*, (postage extra to non-subscribers).

OEEC Report on Methane in Coalfields

The OEEC, in 1956, published a report on drainage and use of methane from coal-fields and have now issued a further report of developments in the subject since 1956 under the same main heading.

The new report includes accounts of fire-damp drainage in Belgium, France, the Saar, Great Britain, Poland, and Germany, and a Belgian contribution on drilling methods. The publication is amplified by drawings and statistical data.

Drainage and Use of Methane from Coalfields—Developments Since 1956 is obtainable in the U.K. from HMSO, or from the OEEC, 2 Rue Andre-Pascal, Paris 16e.

Russian Patents

As a result of requests from subscribers to patents journals produced by Technical Information Company, Chancery House, Chancery Lane, London, W.C.2, the same company are now publishing a *Russian Patents Gazette*.

This contains English language abstracts of all new Russian patents and invention certificates, arranged under 91 class headings. The *Gazette* is being released semi-monthly, the first issue—that of January 1959—was published in June, subsequent issues being published rapidly to bring it up to date.

Subscription rates are £32, but a lower price is available for those only desiring certain sections. Copies of Russian patents are supplied at 8s each, and translations of Russian patent specifications are available to subscribers from £2 each.

Solartron's First Decade

The profusely-illustrated and attractively-produced 1958 *Annual Review of the Solartron Electronic Group* records the continued steady growth of this company which was founded as recently as 1948. The original two-man nucleus has now expanded to a Group board of experts controlling six specialized subsidiary companies. Overseas there are now four sales subsidiaries and a further five associated companies. Sales now top the £2 million mark yearly, and exports are £500,000 a year. During the year to June 1958, export orders alone were worth over three times the Group's 1954 orders from all sources. Total orders in the former period represented a 52 per cent increase over the previous year.

The manner in which Solartron instruments are produced is described within the pages of the Review, together with an analysis of the ideas and philosophy of the Group, and its confidence in the potentialities of the future. The latter is underlined by the fact that almost one-fifth of total Group employees are research personnel.

"The First Fifty Years"

To mark the half-century of history of Castrol motor oils, discussed elsewhere in this issue, C. C. Wakefield & Co have entitled their annual achievements book for 1959, *The First Fifty Years*.

In the space of 48 pages it chronicles the achievements of a host of famous names in the sphere of speed on land, water, and in the air. Action photographs portray such milestones in the history of racing as the aerial crossing of the Atlantic by Alcock and Brown in 1919, the Schneider Trophy events, the breaking of the land speed record in 1933 by Sir Malcolm Campbell's Bluebird, and in 1955, his son's establishment of a new water speed record on Ullswater.

The book is available free of charge from C. C. Wakefield & Co. Ltd.

Persia's first oil tanker, Reza Shah the Great, *discharging* 31,000 *tons of Kuwait oil at No.* 10 *jetty, Thames Haven*

The Thames Haven Storage Facilities

The area now known as Thames Haven, situated in the Essex marshes at the mouth of the Thames, with unique location advantages with respect to London, first came to be developed around the year 1810 when London's fish cargoes were discharged there en route for Billingsgate. Later the area was used as an important cattle landing station until 1882.

The year 1861 saw the first cargo of petroleum reach the Port of London from the U.S.A., but the frequency of explosions from the spirit-carrying barrels resulted in a new Petroleum Act being passed in 1871 which prohibited the carriage of low test petroleum by water above Thames Haven. The ships were required to moor at special buoys just below that point and discharge their cargoes into barges for passage up-river.

This latter operation was soon displaced by the practice of discharging alongside the jetty at Thames Haven. The first British coastal oil terminal thus became established, and its monopoly was complete, for it could offer unrivalled railway, storage, and deep water facilities.

In 1876 the first cargo of petroleum was landed at Thames Haven, and for the next forty years every ton of petroleum spirit imported into London passed through the wharves. This was to set the pattern of business through the subsequent years.

When London and Thames Haven Oil Wharves Ltd were formed, in 1898, the capacity of Thames Haven was a mere 8000 tons. With the growth in the size of oil tankers, however, the necessity arose for a greater volume of storage facilities, and further deep-water berthing and an extensive pumping system were installed. By 1914 tankage capacity had grown to 300,000 tons consisting of 75 storage tanks served by three jetties, and by the outbreak of the second world war the capacity neared a million tons.

Now, in 1959, after intensive development since the last war, the Thames Haven installation, with nearly 300 main tanks holding up to 17,000 tons each, and a total minimum capacity of $1\frac{3}{4}$ million tons, covering 400 acres of land, and with a river frontage of $1\frac{3}{4}$ miles, has become the largest independent oil storage in Europe, and possibly of its kind in the world. It now deals with over 11 per cent of U.K. oil imports, and 60–70 tankers, as well as many more coasters and barges, draw alongside its jetties every month. In 1948, after the disbandment of the Petroleum Board, the Company entered into an agreement with the Shell Refining Company for the storage of crude and products from the adjoining Shell Haven refinery. To-day, some 96 per cent of the business at Thames Haven is with the Shell company. The 38,000-ton tanker *Zaphon*, the flagship of the Shell fleet, is a regular visitor alongside Thames Haven terminal.

The agreement with Shell marked the start of a major expansion programme at Thames Haven which is still in progress.

Tankage had to be modified to suit the new operating conditions, and a completely new system of pipelines was installed to handle 2000 tons hour. Jetties were extended or replaced and in mid-1958 two new specially-designed jetties, of 474 ft and 774 ft in length respectively, were built, and jettyhead facilities to cope with pumping speeds of over 3500 tons hour were installed together with Woodfield push-button control boom structures. These enabled tankers to be loaded or discharged within twenty-four hours regardless of the state of the tides. Nearly 10 miles of pipeline, varying from 6–24 inches, with an additional 9 miles of inland lines, have been installed, to complete a system which throughout the installation has a total length of over 150 miles.

The existing roadcar loading stands can cope with up to 72 cars simultaneously, and 200 300 cars a day at peak times, supplying as many as 40 products in the lighter products range, from rocket fuels to gas oil. Deliveries are made to most of the major oil distributors in Britain. The loading stand is supplied through 44 elevated cylinders, each holding about 35 tons or some 10,000 gallons, which are filled daily from the main storage tanks.

Several subsidiary roadcar loading sites are also in operation at Thames Haven and in all 420 vehicles per day are dealt with: a total throughput of around 4200 tons or nearly 1,250,000 gallons.

Construction is also now being completed of new fully-automatic loading gantries, designed to cater for the increasing demand for heavier grades of fuel oil. This new stand will allow 16 vehicles to load simultaneously, and provision has been made for a further 16 loading bays. Deliveries will be made at 400 gallons minute, enough to load the largest vehicle in less than 10 minutes, and will involve three grades of fuel oil.

With an eye to the future, Thames Haven has a further 150 acres of vacant land remaining to allow for possible development. With this it would be possible to double present capacity should the demand call for it.

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Personal Notes

Appointments to Boards of Royal Dutch/Shell Companies

Shell International Petroleum Company Ltd has announced the appointment to its board of directors of **J. C. G. Boot** and **A. S. C. Hulton**.

The appointment has also been announced of **W. F. Mitchell** to the board of Shell International Chemical Company Ltd. At the same time, Mr Mitchell becomes a director of Bataafse Internationale Chemie Mij, in Holland.

In addition, Bataafse Petroleum Mij has announced the appointment of **E. C. Peet** as a member of its board of directors. Mr Peet, who is a U.S. citizen, was appointed a director of The Shell Petroleum Company Ltd in 1953.

The Iranian Oil Exploration and Producing Company and the Iranian Oil Refining Company announce that **K. Scholtens** has retired from his posts as chairman of the boards and general managing director of the Companies. **E. W. Berlin**, at present holding the position of deputy general managing director of the operating companies, will succeed Mr Scholtens.

Mr Scholtens took up his present appointments in March 1956, coming to the operating companies from the Bataafsche Petroleum Maatschappij.

Trained as a Dutch mining engineer, he has spent over thirty years in the producing, refining, and sales activities of the oil industry. In the ten years prior to taking up his appointment with the operating companies, he held the positions of, respectively, general manager of Bataafsche operations in Indonesia, The Hague manager of Eastern Hemisphere operations, and director of the Group's marketing organization in the Netherlands. Mr Scholtens has received high decorations from both The Shah and Queen Juliana.

In Mr Berlin's career with the Standard-Vacuum Oil Company he has held the posts of senior engineer, head of Production Department, and general representative in Jakarta with responsibility for all his company's interests in Indonesia. During the latter part of the war he was area petroleum officer for the China-Burma-India theatre of operations. He therefore takes up his new appointments with much experience both of the production side of the oil industry and of work in co-operation with Governments.

Harold J. Rose has been elected a vice president of Esso Export Corporation, and will also serve as general manager of a new chemicals department being formed by Esso Export to assist Jersey Standard's overseas affiliates which market chemicals.

Mr Rose was formerly assistant general manager of the chemical products department of Esso Standard Oil Company, as well as a vice president of Enjay Company Inc.

After receiving a master's degree in organic chemistry from the University of Kentucky in 1940, he served on the faculty there for two years. In 1942, he joined Esso Standard as a research chemist at the Baton Rouge, Louisiana, refinery, where he subsequently served as a section head in charge of petrochemicals research. In 1954, he transferred to Esso Research and Engineering Company where he became co-ordinator of petrochemicals research before returning to Esso Standard in 1957.

Kenneth B. Barnes has been named vice-president of Eastern Hemisphere Operations for *The Oil and Gas Journal* and will establish an office in London which will be concerned with business and editorial activity in Europe, North Africa, and the Middle East.

Kenneth B. Barnes

Mr Barnes who has been serving as vice-president and editorial director of the *Journal* in Tulsa, will move to London on 1 September.

He joined the *Journal* staff in 1944 as engineering editor and later was named managing editor. He served as editor from 1952–58, at which time he became vice-president and editorial director.

Before joining the *Journal* he was assistant chief engineer for the Tulsa Division of Gulf Oil Corp. His petroleum experience also includes work with Cities Service Oil Co. and Continental Oil Co.

He received his B.S. degree in petroleum engineering from the University of Oklahoma and his M.S. degree in petroleum engineering from Pennsylvania State University. He has served on the faculty of both Pennsylvania State University and Tulsa University.

Ralph N. Quartano has been appointed editor of *Petroleum Times* following the retirement of Mrs Edith J. Dichter. Mr Quartano was with Bataafsche Petroleum Mij for five years in their head office at The Hague and, during this time, he was particularly associated with petroleum-chemical operations. He later joined The Lummus Co. Ltd in London as a process engineer.

The Minister of Power has appointed **Dr C. M. Cawley,** C.B.E., D.Sc., F.R.I.C., F.Inst.Pet., to be chief scientist to the Ministry in succession to **Sir Kelvin Spencer,** C.B.E., who has retired from the public service.

Dr C. M. Cawley

Dr Cawley, who is 52, has been at the headquarters of the DSIR for the past six years where he has been responsible for administering general policy in relation to the work of the Department's research stations, and for grants made by the Department to the Universities and other bodies for the promotion of research and the training of research workers. He graduated at London University with first-class honours in chemistry and joined the scientific Civil Service in 1929, serving on the staff of the Fuel Research Station until 1953. He will take up his new appointment at the Ministry of Power in the early Autumn.

Consequent on the retirement of **S. Wright,** C.B., J.P., of the Ministry of Power, **M. P. Murray,** C.B., has been appointed to succeed him as Director of Establishments. **Owen Francis** is being transferred to succeed Mr Murray in charge of the Electricity Division, and **J. A. Beckett,** C.M.G., is being promoted to the rank of Under-Secretary, and will succeed Mr Francis in charge of the Gas Division.

C. E. Wrangham has been appointed joint managing director of The Power-Gas Corporation Ltd.

At his own request and for personal reasons, **F. R. Banks,** Air Commodore (Ret'd), C.B., O.B.E., M.I.Mech.E., F.R.Ae.S., F.Inst. Pet., Hon.F.I.A.S., has relinquished the post of sales director, Bristol Siddeley Engines Ltd, and has retired from the board of the Company. The Board has accepted this with regret.

F. R. Banks

W. H. Rees has been appointed general sales manager to the Company.

Air Commodore Banks was appointed a director of The Bristol Aeroplane Co. Ltd in 1954, and only recently became sales director to the newly formed Bristol Siddeley Engine Company Ltd, the post which he is relinquishing.

At one time he served as aviation engine specialist in the technical department of the Anglo-American Oil Co., and later became technical manager of the Associated Ethyl Co. Here he concentrated upon aero engine research and development, specializing in the application of fuels to high-duty aero engines.

During the second world war he was appointed Director-General of (Aero) Engine Research and Development at the Ministry of Aircraft Production. After the war he returned to the Associated Ethyl Co.

The First National City Bank of New York announces the recent appointment of **Edward Symonds** to the Petroleum Department, part of the bank's Special Industries Group. Formerly with the International Bank for Reconstruction & Development (World Bank), he will direct the economic activities of the department.

E. Symonds

From 1949 to 1953, Mr Symonds worked in London as deputy editor of the *Petroleum Press Service*, and subsequently information officer for Mobil Oil Company Ltd.

Born in Rugby, England, Mr Symonds is a graduate of Oriel College, Oxford, where he took his degree in Economics.

National Benzole Company Ltd announce that **L. Higgenbottam,** retail marketing representative in Liverpool Division, has been appointed a district manager in West Riding Division.

James Sutherland, formerly sales manager of Esso Petroleum Company's Scottish Division, has been appointed divisional manager on the retirement of **I. G. Brackenridge.**

J. Sutherland

Mr Sutherland, who is 40 years old, joined the Company as a clerk in 1938. He was appointed a sales representative in 1948 and district manager in Birmingham in 1951. Subsequently he held a series of managerial positions in the Company's Northern Division until his appointment as sales manager in Glasgow in September 1957.

Mr Sutherland has just returned from a visit to the United States where he studied marketing methods and attended the management problems for executives course at the Pittsburgh University School of Business Administration.

Mr Brackenridge, who is retiring after 39 years service with the Company, has been Scottish divisional manager for 25 years, apart from a period when he was regional manager of the Petroleum Board.

Chamberlain Plant Ltd, of Crown Works, Southbury Road, Enfield, Middlesex, report that their general manager, **W. P. Mullen,** will be visiting European and Mediterranean countries on a fact finding and market assessment tour. Mr Mullen will also take the opportunity of visiting the company's existing agents in these countries.

W. P. Mullen

PETROLEUM IN PARLIAMENT

Fuel and Power Debate

On 4 May a fuel and power debate was held in the Committee of Supply. The following excerpts are taken from this debate which was too long for full reportage.

Mr Alfred Robens (Blyth), denied that the coal industry had priced itself out of the market. The nation had, in fact, "torn the guts out of the coal industry" by constantly demanding increased coal production, without any regard to the economics of the question. "When this nation really needed oil, the oil was not available. The coal industry was compelled to go on raising coal at huge losses. No one in the oil industry ever, at any time, produced a barrel of oil and lost a penny piece on it".

Mr Robens asserted that the opposition could not ever possibly accept the Government's view that unrestricted competition and consumers' complete freedom of choice was the right approach to a sound fuel and power policy for the nation. "To abandon coal production because of the narrow cost margins as between coal and oil would be the height of folly and complete economic suicide for the nation".

It was asserted that coal must have its proper place in the national economy; "If the government can put the agricultural industry in its right place they should not run away from dealing with the coal industry and treating it in the same way".

Oil was said to be coming into the country at bargain prices because it had had a bar put on it in some European countries. Germany had put a turnover tax on imported oil "to protect its own coal industry. Therefore the refineries on the Continent have been dumping oil in this country, where there is no restriction. Only one quarter of the fuel oil being used in industry to-day is coming from refineries in the U.K. Three-quarters of it is coming from refineries outside, and mainly from Continental refineries".

"Fuel oil consumption in Britain has risen in the five years from 1953 to 1958 by about 6·7 million tons. The fuel oil output of the United Kingdom refineries has risen by only 1·5 million tons. The remainder has been brought in from foreign refineries. The Continental refineries have surpluses of fuel oil because of the increased consumption and, therefore, production of gasoline and light oils. Fuel oil is being dumped in this country at prices per ton which are far below the price per ton of the crude oil from which it is made, and stands in no relation to any reasonable calculation of costs of production. If the demand for fuel oil rises faster than the demand for gasoline, then fuel oil prices will rise again. While crude oil is being refined, the light and fuel oils must be extracted. To keep these in balance, if there is a tremendous demand for gasoline and light oils then a market must be found for the fuel oils. When the bar is applied, there is not the demand on the Continent. Then, over it comes to the United Kingdom and the Government have done little or nothing about it."

Turning to the liquefied methane experiment, Mr Robens mentioned "the cloak of secrecy that the gas industry has put over the whole experiment", and said that the link between the Constock International Methane Ltd and the Gas Council would have as its first principle the selling of as much liquid methane as possible, with no consideration for its effect on the mining industry.

The Paymaster-General, Mr Reginald Maudling, in replying for the Government, said that with regard to the relative uncertainty of much of our sources of oil supply, provisions were being made against temporary interruptions by means of substantial stockpiling. "We must make some temporary provisions, but we cannot base our policy on the permanent possibility of the total interruption of supplies."

On the question of the "dumping of fuel oil", Mr Maudling said that he had no evidence of this happening. If the lack of freedom of the coal industry to give rebates was being discussed he would gladly consider any request by the Coal Board for further freedom in this matter.

The Paymaster-General said that the consumption of oil in the power stations would reach its peak in 1960 and decline thereafter, whereas the consumption of coal in the power stations was likely to rise between 1958 and 1965 by about 10 million tons, coming to a total of about 56 million tons in 1965.

It was also said that of the gas industry's total thermal input last year, only 5 per cent consisted of oil. Over many years it had been using only 2 or 3 per cent of oil for making water gas.

The gas industry would only flourish if it was on an economic basis and if the price of gas was competitive. In many cases, it was said, this meant making use of oil products, "such as oil for making carburetted water gas when the coke market is weak, and oil for peak loading, for it is much more flexible than normal methods of making gas from coal, and the use of tail gas from refineries, which would otherwise be wasted".

Robert Woof (Blaydon), asked how could the Coal Board compete against oil companies which had captured markets traditionally supplied by coal, especially when the price of coal "has been grossly inflated by heavy financial responsibilities which have put the Board, bridled and saddled with the actual operational costs, under a very severe handicap in its competition with oil companies".

Sir Peter Roberts (Sheffield, Heeley), said it was the duty of any Government to foster our coal industry rather than "put ourselves at the mercy of, and at the whim of, gentlemen in the Middle East, the Caribbean, or the Sahara."

Emanuel Shinwell (Easington), in reply to accusations that the Opposition wished to protect the coal industry, suggested that a large measure of protection had been afforded by the present Government to the oil industry. He said that he wondered what it had cost the taxpayers of Britain over the last dozen years "to assure protection for the British Petroleum Company, the Shell Oil Company, and the others? In military expenditure alone it must have amounted to many hundreds of millions of pounds". He cited the troubles of the last few years at Suez, Aden, and over the Baghdad Pact, as cases in point; and went on to say that," . . . it may well be that it is worth while, out of the vast profits provided for the Government from the production and importation of oil, to provide a small subsidy for the coal industry". It was asked whether the profit the Government earned from the oil industry was equivalent to the expenditure incurred on military activities for the protection of the industry.

Alan Fitch (Wigan), said that when efficiency was discussed the respective positions of the two competing industries should be borne in mind; "international oil, a very wealthy

organization, and the nationalized coal industry". He pointed out that in 1957 "British Petroleum and Royal Dutch Shell invested for capital development £486 million, nearly five times as much as the nationalized coal industry, which invested £103 million. In the ten years until 1957, £240 million was spent on oil refineries in this country . . . the National Coal Board started from scratch". It was said to have taken over a run down industry and the prices that it was allowed to charge were only enough to cover costs and compensation.

Mr Fitch said that the Board had raised the conditions of work in the coal industry until the miners were now among the best paid workers in the country. He wondered whether "the international oil companies have looked after their workers, particularly non-European workers, as well as the NCB has looked after the miners. I should like to know the conditions under which many people in the oil companies are working".

Sir Albert Braithwaite (Harrow, West), suggested that there should be "an immediate levy of 3d per ton on all coal and coal equivalent, to be paid into a fund that would run the (coal) industry down in a sensible way and enable us to deploy the people who work in it in other industries as best we can". It was said it would produce £3 million a year.

John Cronin (Loughborough), maintained that fuel oil meant a really serious net loss on our balance of payments, that three-quarters of it was refined abroad. Quality fuel oil was being sold "at a lower price than ever crude oil was sold in its country of origin". It was said that the position would get worse, for Sahara oil would be coming to Germany via the Franco-German pipelines that were being built with the result that more fuel oil would then be dumped in this country. A suggested tax on fuel oil could be easily compensated for by a reduction in the duty "on oils for propulsion".

Bernard Braine (Essex, South-East), reminded the House that the re-export of refined oil products from Britain earns the country at least £100 million a year, and other benefits flowed from this activity.

It was said by Albert Roberts (Normanton) that in the first fifteen weeks of 1959, compared with the same period of 1958, the gas industry used 9·5 per cent less coal; the electricity industry 4·4 per cent less; the railways 10·4 per cent; coke ovens 15·7 per cent; iron and steel 18·2 per cent; and the engineering and metal trades 16·4 per cent less. The oil industry, Mr Roberts said, had no scruples, it was prepared to sell its oil at a loss to get established, regardless of the consequences to those whose efforts in the mines had sustained the country for so many years.

William Blyton (Houghton-le-Spring) told Members that he had been to the Institute of Petroleum dinner in February. He said Lord Mills had given oil the green light that night and coal would expect no help from him. More than 600 consumers were said to have converted to oil in 1958, representing a rate of $1\frac{1}{4}$ million tons of coal per annum. This was "bad enough", Mr Blyton said, but also another 200 customers were converting to oil, involving another one million tons of coal, while 380 consumers (representing a further one million tons of coal) were considering the change over this year. This meant a further reduction in the coal market of $3\frac{1}{4}$ million tons. The speaker went on to complain of the fact that the Coal Board was "handcuffed" and could not compete on a fair basis in the matter of prices, and that the oil-producing countries would very soon be taking over the oilfields for themselves.

Sir Ian Horobin, Parliamentary Secretary to the Ministry of Power, in winding up for the Government, first said that it was not intended that any future power stations should be commenced which would burn oil only.

He said that it was as well to remember that since 1951 the price of coal had gone up by about 50 per cent and the price of oil by about 7 per cent. "We simply must face the fact that, in many respects, oil has reached a position where its advantages are quite overwhelming". Generally the factors of coal equivalence were 2 to 1, but the competitive advantages of oil were sometimes much greater. In some branches of the steel industry the ratio was as high as 5 to 1, and in some branches of transport the ratio was 10 to 1.

It was said that, as had been pointed out earlier in the debate, the gas industry's thermal input derived from oil was only 5 per cent, and further, that even with allowances being made for the use of liquid methane, etc, it was not expected that in ten years it would be more than 10 per cent.

Rebate on Heavy Oils

In the committee stage of the Finance Bill, on 11 May, there was a discussion on Clause 6, which involved a rebate on heavy oils for certain usages. The Paymaster-General explained the categories affected. An engine mounted on a road vehicle, for example a concrete-mixing machine on a vehicle, would no longer have to use duty-paid fuel. Neither would vehicles which did not use public roads and were not licenced, examples being those used inside factories, in quarries, or on large estates. Two further additions to the categories were road construction vehicles, and vehicles used on public roads only for passing from one part of the owner's land to another and for distances of not more than six miles a week.

Gasification of Coal

In a written answer on 14 May, the Parliamentary Secretary to the Ministry of Power stated that expenditure on research into the gasification of coal, since the date of nationalization, amounted to nearly £$1\frac{1}{4}$ million.

Also, the Gas Council had undertaken the construction of a new type of high pressure gasification plant on a commercial scale at an estimated cost of some £5 million. In order to solve chemical engineering problems, this plant would be used initially to gasify oil but it was later planned to gasify small coal.

Aircraft (Oil Duty)

The Secretary to the Treasury, on 14 May, reported that remission of the duty on hydrocarbon oil used in civil aircraft would cost about £$1\frac{1}{2}$ million a year, and a reduction of the duty by a shilling would cost about £600,000.

Fawley Refinery Imports

If Fawley refinery had not existed and products were imported in place of its actual crude supply, the Paymaster-General said in a written answer on 11 May, the U.K. imports bill would have been increased by the equivalent of some £20 million in 1958. It was not possible to give an estimate of the dollar content of this figure.

Southampton Water Refinery Project

The President of the Board of Trade, in an answer on 7 May, said that he would not urge the "Caltex Company" to reconsider its decision to postpone its refinery project. The decision must rest with the Company.

Oil Tankers (Overloading)

It was said, in an answer by the Parliamentary Secretary to the Ministry of Transport and Civil Aviation on 6 May, that four prosecutions had taken place in the last twelve months arising out of the overloading of oil tankers. Total fines were £1175, and the estimated increased profit earned by two of the ships which arrived in Britain overloaded was £3233. In the case of the other two vessels the excess cargo was removed before the ships were allowed to sail.

Whilst admitting the fact that these fines, laid down in 1932, were out of date, the Parliamentary Secretary said that there were great difficulties in increasing the levels of fines which could be inflicted by magistrates' courts. The matter would be reviewed in the light of the forthcoming International Conference on the Load Line Convention. Nevertheless, less than 0·5 per cent of the number of ships examined were found to be overloaded.

Oil Pollution Prosecutions

The Parliamentary Secretary to the Ministry of Transport and Civil Aviation said in a written answer on 6 May that between 8 September 1956, when the Oil in Navigable Waters Act 1955 came into force, and 31 December 1958, there had been 92 convictions under the Act. The fines imposed ranged from £20 to £900.

Liquid Methane

The Parliamentary Secretary to the Ministry of Power, in a written answer on 14 May, said that the total expenditure to date on the U.K. liquid methane project amounted to rather under £1½ million, mainly on the tanker and onshore installations in Britain.

Asked the average cost of gas per therm manufactured from liquid methane, compared to the average cost of gas per therm manufactured from oil or coal, it was said on 14 May that whilst no assessment was yet possible in the case of liquid methane, the average cost of production from coal and oil respectively were roughly 16d and 14d per therm. These figures were for the London area, the costs varying very widely according to circumstances of production and demand.

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Fifth World Petroleum Congress

The proceedings of the Fifth World Petroleum Congress are to be published in eleven volumes, that is in one volume for each of the ten sections plus a general volume covering general lectures and other activities. It is anticipated that these volumes will be available by the end of the year and orders for copies should be sent to Fifth World Petroleum Congress Inc, 527 Madison Avenue, New York 22, N.Y.

Prices are as set out below:

	Congress Members (first copy)	*Non-Members and Members additional copies*
Single volume	87·50	812·50
Post and packing ...	—	·50
Complete set of 11 volumes	870·00	8110·00
Post and packing ...	—	5·50

Meanwhile copies of the preprints of individual papers are available and may be obtained from the Congress offices price 25 cents per copy.

Trade Literature, etc.

Automatic Particle Counter and Sizer

The counting and sizing of microscopic particles has always been a slow laborious task, but at the same time there are now an increasing number of industries which use these methods. The twofold need in counting and sizing work is, first, to release skilled microscopists from routine work to enable them to be employed in interpretation and other such activities, and secondly, the need for speed in making results available for use as soon as possible after sampling.

Automatic electronic methods to meet these requirements are described in a booklet issued by Casella (Electronics) Ltd, 46–48 Osnaburgh Street, London, N.W.1, entitled *Bench Model, Automatic Particle Counter and Sizer.*

The range of materials which the instrument can deal with is very wide, and includes coal dust, chemical powders, powdered metals, spray droplets. They have also been used in investigating the performance characteristics of commercially-available filters required in the handling of aviation turbine and jet fuel.

Whessoe Facilities at Fison's New Plant

Two stainless steel storage tanks for the holding of 1,500,000 gallons of ammonium nitrate have been built by Whessoe Ltd, Darlington, at the new nitrogen factory of Fison's, recently opened at Stanford-le-Hope.

One of the tanks, 80 feet in diameter and 32 feet high, is the largest stainless steel tank ever built in the U.K.

Besides building the two tanks, Whessoe supplied a 60-ft diameter sphere for the storage of 2000 tons of liquid ammonia at a working pressure of 57·5 psig. This, too, is the largest unit of its kind in the U.K.

James Gordon Equipment Leaflets

James Gordon & Co. Ltd, Dalston Gardens, Stanmore, Middlesex, combustion engineers and boiler control specialists, have issued two new leaflets.

The first one of these, No. 103, gives a complete list of their range of equipment, which has been considerably increased recently with an expansion in the Company's structure.

The second leaflet, No. 180, deals with the Elliott CO_2 meter, which is offered as an alternative to the Mono CO_2 recorder. The former instrument is of the thermal conductivity type whilst the latter works on the chemical absorption principle.

Northern Agents for Polypenco Plastics

Polypenco Ltd, manufacturers of engineering industrial plastics, has recently appointed two new agents:

North West England—The Norman Wrigley Company Ltd, 366 Stretford Road, Manchester 15.

Scotland—Durward Clarkson & Company Ltd, 137A St Vincent Street, Glasgow C.2.

Bottogas Heat for the Family

A multi-purpose "Family Set" of appliances that can provide heat for the housewife and the handyman, indoors or outdoors, is being marketed by Shell-Mex and B.P. Gases Ltd.

The appliances are attached to an easily-carried container holding 12½ pounds of liquefied *Bottogas*, which provide approximately 84 cu ft of gas.

The appliances, which are easily fitted to the container, are: a boiling ring, a space heater, a portable lantern, and a gas poker unit.

In addition, the Bottogas range of blow torch outfits can be used with the Bottogas "Family" container.

Distillation Column for Carrington

The distillation column in the accompanying photograph, which is approximately 100 ft long, was made to the order of Matthew Hall & Co. Ltd. by Autodrome (Engineers) Ltd. The column is shown en route to Carrington, Cheshire, where it will be incorporated in a styrene monomer plant being erected by Matthew Hall for Petrochemicals Ltd, an associate of the Shell International Chemical Company Ltd.

Dresser Contract for Argentinian Services

An agreement has recently been signed whereby Dresser Industries Inc, through Ideco Inc, will supply Southeastern Drilling Co. of Argentina SA (SEDA) with twenty Ideco rigs and a large variety of other equipment and supplies.

SEDA, the Argentine affiliate of Southeastern Drilling Corp, of Dallas, was recently awarded a contract with Yacimentos Petroliferos Fiscales, the state oil entity, for the drilling of 1000 wells in the Comodoro Rivadavia region of southern Argentina.

Under the terms of the new contract, the initial part of which is in excess of $10 million, Dresser equipment will be used by SEDA throughout its drilling programme for YPF.

In addition to the rigs mentioned, Dresser will supply road building equipment, housing, drilling mud additives, drilling bits, and technical services.

Sigmund Zero Gland Leakage Pump

The latest addition to the range of Sigmund Pumps Ltd, Team Valley, Gateshead 11, is the Zero Leakage Pump, a unit specially designed for operation where the nature of the liquid pumped demands there be no leakage whatsoever. Additionally by virtue of its compactness it is eminently suitable for installation in confined and restricted spaces.

Constructed in stainless steel the new pump is of the canned rotor type, completely eliminating glands, mechanical seals, and similar sources of leakage. The bearings are lubricated entirely by the pumped liquid and no contamination by oil or grease is therefore possible.

The unit is designed for foot mounting, but in many instances direct pipeline mounting is permissible, provided the axle is kept in the horizontal plane.

French Resinates, Solvents, and Plasticizers in U.K.

A range of important new resinates, solvents, and plasticizers for the paint, varnish, ink, and allied industries, developed and manufactured by S. A. Sheby, of Paris, is now obtainable from Charles H. Windschuegl Ltd, 1 Leadenhall Street, London, E.C.3.

Of particular interest is *Mouillant 54*, a new completely non-specific wetting agent for the milling of paints. It is compatible with all media: oils, cellulose, or synthetic types.

Data sheets on *Mouillant 54* and the dozen other chemicals in the range are available on request.

New Fluorocarbon TFE Resin

Polypenco Ltd, 68–70 Tewin Road, Welwyn Garden City, announce a new addition to their range of engineering plastics. This material, known as *Fluorosint*, is an entirely new fluorocarbon TFE base resin, comprising polytetrafluoroethylene (PTFE) and other specially-developed constituents designed to improve the mechanical and thermal properties of PTFE without materially affecting its electrical and chemical characteristics.

Price's (Bromborough) Ltd's Italian Agents

Price's (Bromborough) Ltd announce the appointment of Beghe & Chiapetta, Via Isonzo 25, Milan, as the selling agents in Italy for Price's stearines, oleines, fatty acids, cloth and textile oils, and fatty alcohols.

Beghe & Chiapetta already represent a number of well-known U.K. chemical manufacturers but with the acceptance of the agency for Price's products they make their first entry with British materials into the oleochemical field.

Separator Sizing

A new method of sizing oil and gas separators quickly and accurately for a wide range of well stream conditions has recently been published by Black, Sivalls & Bryson, Inc, U.S. manufacturers of oilfield equipment.

The new sizing method, exclusively developed by the company, reduces affecting conditions and characteristics to factors, and incorporates these factors into a universally applicable equation. Factor values have been precalculated and tabulated to permit visual selection of separator sizes rather than mathematical computations of the correct value for a specific condition or characteristic.

Copies of the new 114-page, Catalogue 30 are available upon request from Black, Sivalls & Bryson, Inc, 7500 East 12th Street, Kansas City 26, Missouri.

Automatic Adiabatic Bomb Calorimeter

A. Gallenkamp & Co. Ltd, Sun Street, London, E.C.2., has developed an adiabatic type of calorimeter designed for the maximum number of determinations daily at very high accuracy. The unique design of the water jacket and control system enables the jacket to follow the temperature of the calorimeter vessel with considerable precision at all stages of each test. Corrections for heat exchange between the calorimeter and its surroundings are thus eliminated and the total time for each determination, including the final calculations, is halved.

Portable Gantry for Cooling Tower Maintenance

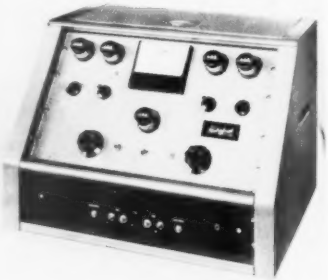
Head Wrightson Processes Ltd have developed a portable cooling tower gantry to assist with tower maintenance.

The removal of the induced draught fan and fan drive gear box for inspection and maintenance necessitates rigging up suitable tackle which normally delays the bringing of the tower back into service, and to speed this operation the Head Wrightson COMPACT Gantry has been designed.

An essential feature is the ability to man-handle the various components to the fan deck of the tower for assembly and this has been done by making the main beam in short sections.

Podbielniak Analogue Computer

An unusual contribution to gas chromatographic analysis is an analogue computer introduced by Podbielniak Inc, 341 East Ohio Street, Chicago 11, Illinois, to speed up time of analysis.



The Podbielniak *Computagram* makes it possible to calculate a complete analysis in less than three minutes. Calculated percentages are accurate to within 0·1 per cent. The computer corrects peak areas or peak heights for differences in the response of the detector and normalizes the corrected areas or heights to total 100, thereby giving the per cent (mole or weight according to correction factors inserted) of each individual component.

Perkins' Brazilian Associate

A new company named Motores Perkins SA has been formed in Brazil to manufacture the six-cylinder Perkins Six B340 diesel engine for 5–8 ton trucks produced in Brazil, and other applications.

This important British engineering development follows an agreement between F. Perkins Ltd, of Peterborough, and Murray Simonsen SA, a well-known Brazilian organization.

The new company's capital will be approximately £2 million. Part of this will be taken up in shares by F. Perkins Ltd, through the transfer of a comprehensive machining line from Peterborough worth £500,000–£750,000 sterling.

Metric Series Rotameters

Rotameter Manufacturing Co. Ltd, 330 Purley Way, Croydon, Surrey has issued details of a new photo-electric flow alarm for use with the Company's industrial metric series rotameters, Types 907 and 914. The series of rotameters are themselves fully described in a leaflet which includes explanatory diagrams and capacity tables.

Perkins to Manufacture U.S. Gas Turbines

F. Perkins Ltd is to manufacture a range of industrial gas turbines from 50–1500 hp designed and developed by the Solar Aircraft Company, of San Diego, California.

The Peterborough company has acquired the whole of the share capital of Sugg-Solar Ltd, of Westminster, which formerly had a licence from Solar to manufacture the Mars gas turbine, and has changed this company's name to Perkins Gas Turbines Ltd.

This subsidiary will sell the turbines manufactured by F. Perkins Ltd under licence from the Solar Aircraft Company.

The agreement with the Solar Aircraft Company gives Perkins the rights to exclusive licences throughout Europe, Africa, and the British Commonwealth, excluding Canada, to manufacture and sell all gas turbines developed by the well-known U.S. company. In addition, Perkins will act as sales representative for Solar gas turbines not in production at Peterborough.

It is the intention of Perkins initially to manufacture the Solar gas turbines in the 50p200 hp range and to market the 500 hp Jupiter engine and the new 1250 Saturn from current production at San Diego.

Flexibox Mechanical Seals at Fawley

To ensure leak-free running over long periods of operation, thus cutting maintenance time to a minimum, 156 rotary-shaft pumps and mixers in use at Fawley refinery have been fitted with Flexibox mechanical seals. So far more than 176 of these seals—two seals are required on some units—have been supplied for use on equipment manufactured by W. H. Allen Sons & Co., Campbell & Co., Hayward-Tyler & Co. Ltd, Pulsometer Engineering Co. Ltd, and Sigmund Pumps Ltd.

The pumps and mixers are handling a diverse variety of products that includes cuprous ammonium acetate, acetic acid, caustic soda, butane, ethylene, naphtha, MEA, propane, fuel oils, gasoline, and sea water. Operating temperatures extend from −140—500 F, and stuffing box pressures cover an equally wide range.

DCL "M" Metering Pumps

The DCL "M" range of metering pumps produced by The Distillers Company Ltd, of Great Burgh, Epsom, Surrey, has been adapted for automatic control. Developed primarily for the accurate metering of small quantities of fluids, the new range can now be operated with pH, temperature, flow, and other controls. The pumps are responsive to pneumatic signals of 3–5 psig, adjustment of the plunger stroke being carried out by a small, compact bellows motor operating through a mechanism designed to reduce "hunting".

Holmes-Kemp Dryers

The range of Holmes-Kemp dryers, manufactured by W. C. Holmes & Co. Ltd, P.O. Box No. B7, Turnbridge, Huddersfield, has been redesigned to give higher efficiencies at lower cost.

The dryers, which are of the totally enclosed, solid desiccant type, have a new type of four-zone heater, one in each tower. It has been found that a dryer using the new heaters will, with no increase in the amount of solid desiccant used, remove approximately 10 per cent more moisture.

A detailed brochure on the range of dryers is available from the manufacturers.

British Celanese Set up New Section

British Celanese Ltd refer to the recent announcement of proposed expansion in the capacity of their existing chemical plants, and of the intention to diversify their activities in the chemical field. In this connexion they have now set up a Chemical Sales Development Section, which, among its other activities, will handle enquiries for chemicals which are or which may become required on an industrial scale, whether or not these are at present in production.

New Sulphuric Acid Plant

The Associated Chemical Companies Group have erected at their Eaglescliffe works a new plant for the production of sulphuric acid. The contract was placed with The Power-Gas Corporation Ltd of Stockton-on-Tees, who erect contact sulphuric acid plant to the design of Chemibau, Dr. A. Zieren GmbH, of Cologne.

The new acid plant has just been commissioned at a rated capacity of 100 tons/day, but the plant is capable of working at an overload if required. The production acid can be delivered at various strengths up to 98·6 per cent.

First Non-Ash Dispersant Oil

A new oil for aircraft piston engines—the first non-ash dispersant additive oil—is now being marketed.

This oil, known as *AeroShell Oil W*, is the latest development in improved lubrication for reciprocating engines and, during flight evaluation tests of over 180,000 engine hours in a wide variety of aircraft, has shown an overall improvement in engine cleanliness with significant reductions in deposits on filters.

AeroShell Oil W is available in two viscosity grades: Grade 80 for most light aircraft engines and Grade 100 for larger engines.

The new oil is the result of a long and carefully planned research programme carried out jointly by Shell laboratories in both Britain and the U.S.A.

A unique laboratory engine test has been developed at Shell's Thornton Research Centre, Cheshire. To provide basic data for the laboratory test, airline experience was obtained with a wide variety of engines on seven different oils of known performance. Then followed over 10,000 hours testing of straight mineral oils. This established that little, if any, improvement could be expected by means of modified refining techniques or selection of crude. It was clear that development of straight oils had reached the end of the road and a new approach was necessary.

As a result of experience in other fields, a dispersant metallic additive was developed for application in engines which could digest these additives.

Flight tests confirmed that the laboratory engine test was capable of accurately predicting the service performance of advanced additive formulations. They also established that marked improvements in oil performance could be achieved by the dispersant additive approach. In large poppet valve engines, however, metallic additives have certain deleterious side effects. When burned in the combustion chamber, the metal from the additive forms high melting point deposits which are liable to become incandescent and cause pre-ignition.

The next step therefore was to achieve the improved performance obtained with the metallic additive oil without its deleterious side effects.

This is what has been achieved with *AeroShell Oil W*. Intensive investigation has led to the selection of a satisfactory non-metallic additive which leaves no ash residue when burned.

Dorr-Oliver Change of Address

The offices of Dorr-Oliver Company Ltd, previously at Abford House, Wilton Road, S.W.1, and the Mechanical Engineering Division at 21-22 Manor Mount, Forest Hill, S.E.23, have moved to:—Norfolk House, Wellesley Road, Croydon, Surrey.

Pilcon New Mobile Drilling Rig

A new mobile drilling rig, designed to drill with 3½-inch drill pipe to 2000 feet, has been developed by Piling & Constructions Company Ltd. (Pilcon) in co-operation with BP. Exploration Co. Ltd. This is the first all-British designed drilling rig of this capacity and mobility to be produced.

The rig, which has been constructed by Armstrong Whitworth (Metal Industries) Ltd, is mounted on a Thorneycroft *Big Ben* truck and powered by twin Dorman 96 bhp diesel engines through the main gear box. The tubular steel mast, which is raised and lowered by hydraulic rams, gives 58 feet clearance above the rotary table and has a capacity of 60,000 lb.

The double drum draw-works are operated through Air Flex clutches and designed for a hook load of 35,000 lb off the main drum. The rotary table has an 18-inch opening, while the mud pump is an Ideal D.50 × 10 inch Duplex. Main controls are compressed air operated.

The rotary swivel has a static capacity of 40,000 lb. Using 2⅞-inch drill pipe it is expected to be able to drill with the rig to a depth of 2500 feet and with 2¾-inch pipe to 4000 feet.

Situations Vacant

A DESIGN ENGINEER

is required by

Texaco Trinidad, Inc.

for oil refinery pipe and vessel work, and also to a lesser extent for straight-forward structural and concrete design work, in Trinidad, West Indies.

Applicants should have a university degree in Mechanical or Civil Engineering, or be at least Graduate Members of one of the corresponding professional institutions. They should also have three years experience of refining or similar high pressure and temperature pipe and vessel design.

The starting salary for this pensionable position will be between £1175 and £1450 p.a., depending on experience and qualifications, and subsidised housing and schooling for children will be available.

Please write with brief particulars to the

Personnel Officer,
Trinoil (U.K.) Limited,
Trinidad House,
Old Burlington Street, London, W.1.

Department of Scientific and Industrial Research: Geophysicist. Pensionable post (graded as Geologist or Senior Geologist) in Geological Survey and Museum, London, for man at least 21 on 1.7.59. Candidates should normally have 1st or 2nd Class honours degree in Geology, Geophysics, Physics, or Mathematics, together with a university qualification to at least first year standard in Geology and in Physics or Mathematics, or an equivalent qualification. Experience in Applied Geophysics an advantage. At least 3 years post graduate or other approved experience necessary for appointment as Senior Geologist. Duties are concerned with geophysical surveys in the field. London salary within the scales £655-£1150 or £1230-£1460, according to age, qualifications and experience. Provision for starting pay above minima. Promotion prospects. Write Civil Service Commission, 17 North Audley Street, London, W.1, quoting S5023/59. Closing date 25th September 1959.

* * *

British Patent

The Proprietor of British Patent No. 650286 relating to improvements in methods and means for guiding floating and cementing well casing in bored holes desires to grant manufacturing licences or to make other arrangements on reasonable terms for the purpose of working the invention in the United Kingdom. For further particulars apply in the first instance to Mathys & Squire, 52 Chancery Lane, London, W.C.2.

For Sale

Off-Shore Drilling Tower, either as a working unit or for demolition as it stands in Granton Harbour, near Edinburgh.

Offers will also be considered for individual items of equipment installed on the tower.

The tower is capable of working in 80 ft of water and has been used for proving coal seams under the Firth-of-Forth. It is normally repositioned by towing on pontoons.

The tower comprises a bolted tubular steel frame and braced structure supported on a cruciform base formed by two diagonally placed steel box girders and surmounted by one accommodation and one working deck. The total weight is approximately 390 tons which includes 128 tons of tubular steelwork and 165 tons of steel plate and sections.

The tower is completely self-sufficient so far as equipment, power, galley, storage and living accommodation are concerned. The main power units comprise three Crompton Parkinson D.C. generators each rated at 50 kW at 440/220v driven by Crossley diesel engines rated at 100 b.h.p. at 500 r.p.m.

The rig used in drilling operations has been removed. Pontoons used in lifting and moving the tower are in current use for similar operations in the North Sea, and the Board will be prepared to consider granting the use of these pontoons on agreed terms to move the tower intact for a limited distance from its present location.

Tender forms, conditions of sale and permission to inspect may be obtained on application to the Chief Contracts Officer, National Coal Board, Hobart House, Grosvenor Place, LONDON, S.W.1.

Closing date for receipt of tenders will be 12 noon on 15th October, 1959.

WATERFOG and Waterspray Installations, automatic or non-automatic, designed and installed for Fire Fighting. Also complete Foam Installations. Fire Armour Limited, 9 George Street, London, W.1.

* * *

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THE INSTITUTE

(At 61 New Cavendish Street, London, W.1., 5.30 p.m.—tea 5 p.m.)

The Theory of Acid Treatment of Limestone Formations. G. Rowan, B.Sc., Ph.D. **2 September**

Piston Ring Friction: Rig Measurements with Low Viscosity Oils. A. de Faro Barros and A. Dyson. **7 October**

Oil and Transport. W. S. Ault, B.A. **4 November**

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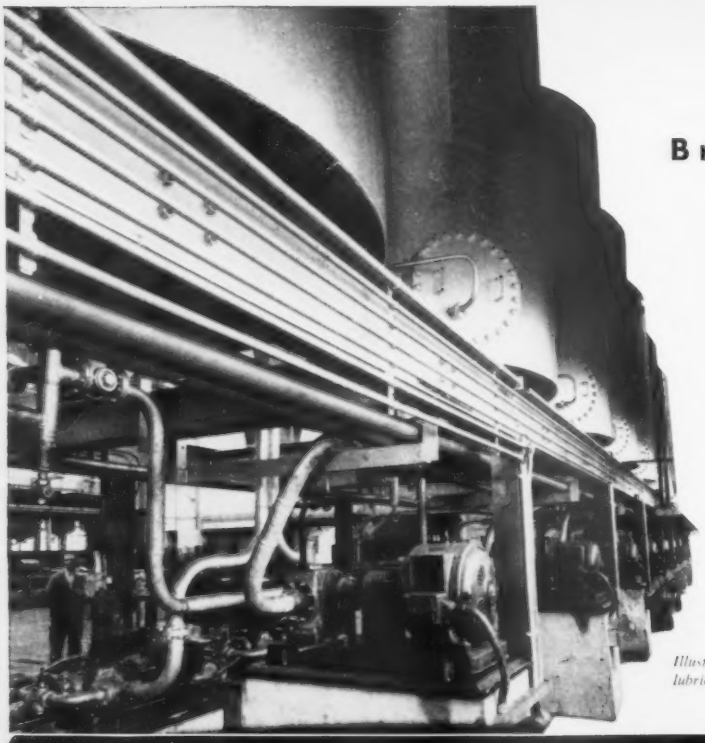

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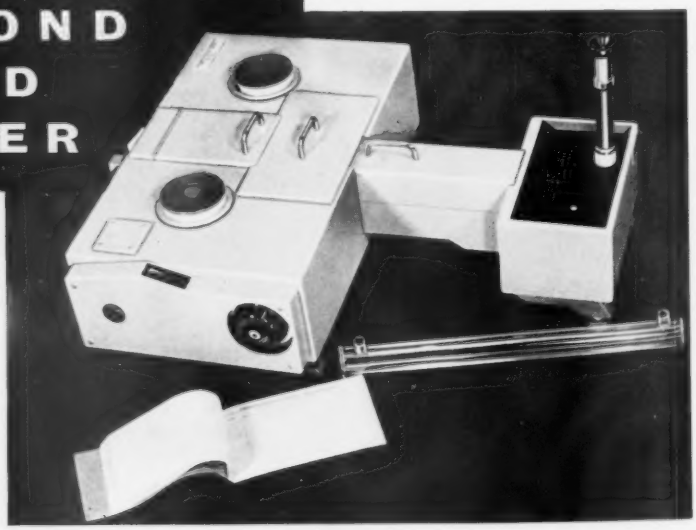

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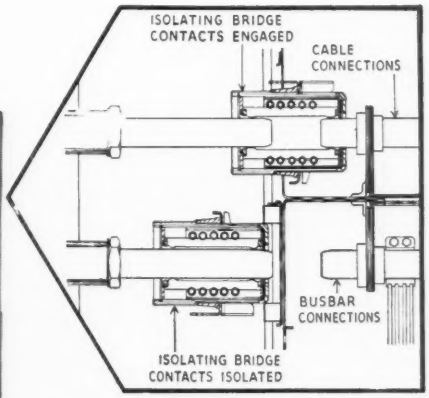

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The 'Isolector' mechanism simplifies busbar selection in duplicate busbar units. These are available in the same cubicle dimensions as single busbar units.

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Class 'E' Switchgear is designed for 3·3 kV and 6·6 kV service, with current ratings up to a maximum of 3,000 amps. The gear is housed in a handsome, dust-proof cubicle and has excellent main and multi-core cabling facilities.

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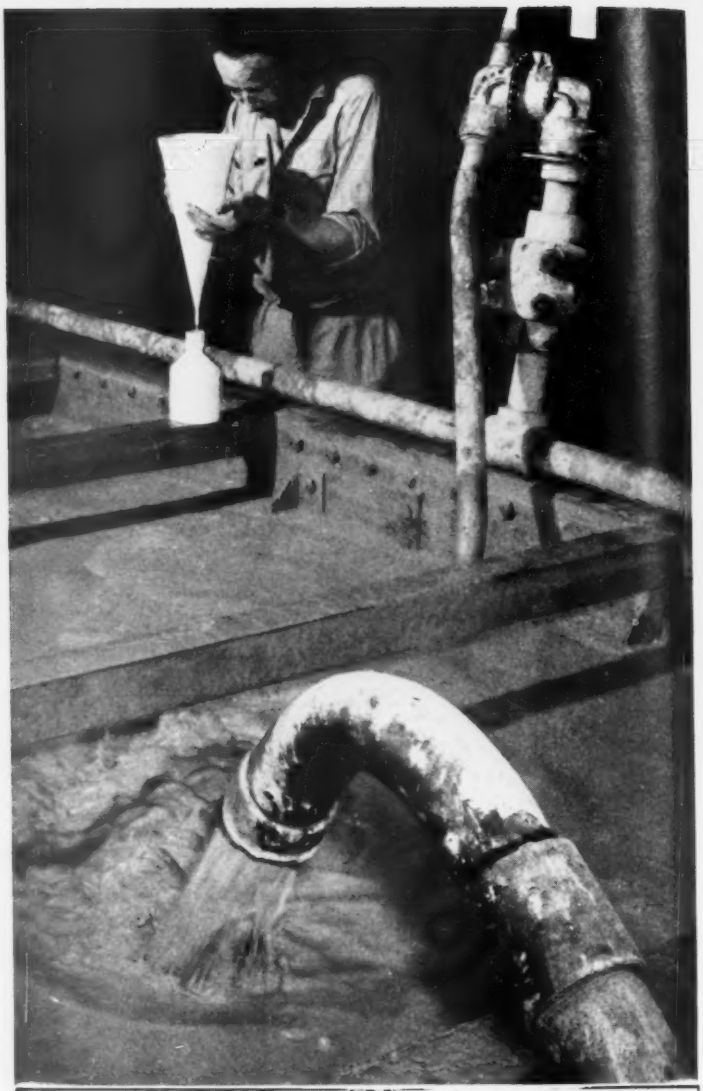
The colloid chemist makes a viscosity test as the first batch of drilling mud is mixed.



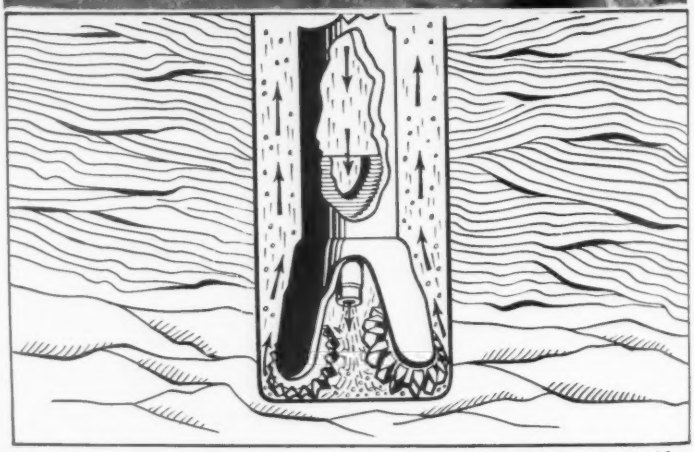
Colloids in circulation

Chemically controlled muds play an essential part in deep drilling for oil, and the efficiency of the new turbo-bits depends largely upon them.

The development of an oilfield is a highly scientific operation. The Chief Petroleum Engineer in charge will have taken his degree in some branch of engineering, geology, physics, chemistry, oil technology or mathematics, and he has probably specialised in an aspect of oilfield development closely related to his subject. He is now applying years of experience to all the problems involved.

The chemist may enter production chemistry and deal with a variety of problems. He may one day be removing emulsified water from crude oil and the next studying the physical and colloidal-chemical behaviour of drilling mud used as a circulating fluid. Drilling mud controls high underground pressures, lubricates the drilling bit, seals off unwanted water and gas layers, stabilizes the walls of the hole, and floats the rock fragments to the surface. There is a whole branch of petroleum laboratory work devoted to investigating ways and means of improving types of drilling muds required in oilfields all over the world. For instance, the specific gravity of a mud may vary between 1 and 2.5; it is a major problem to maintain a low-viscosity, readily pumpable mud at a high specific gravity.

Production chemists are now experimenting to find a mud which will be efficient in driving a turbine mounted immediately above the bit. Chemist and engineer are together grappling with new problems as techniques develop.



Drill collar cut away to show mud flow.

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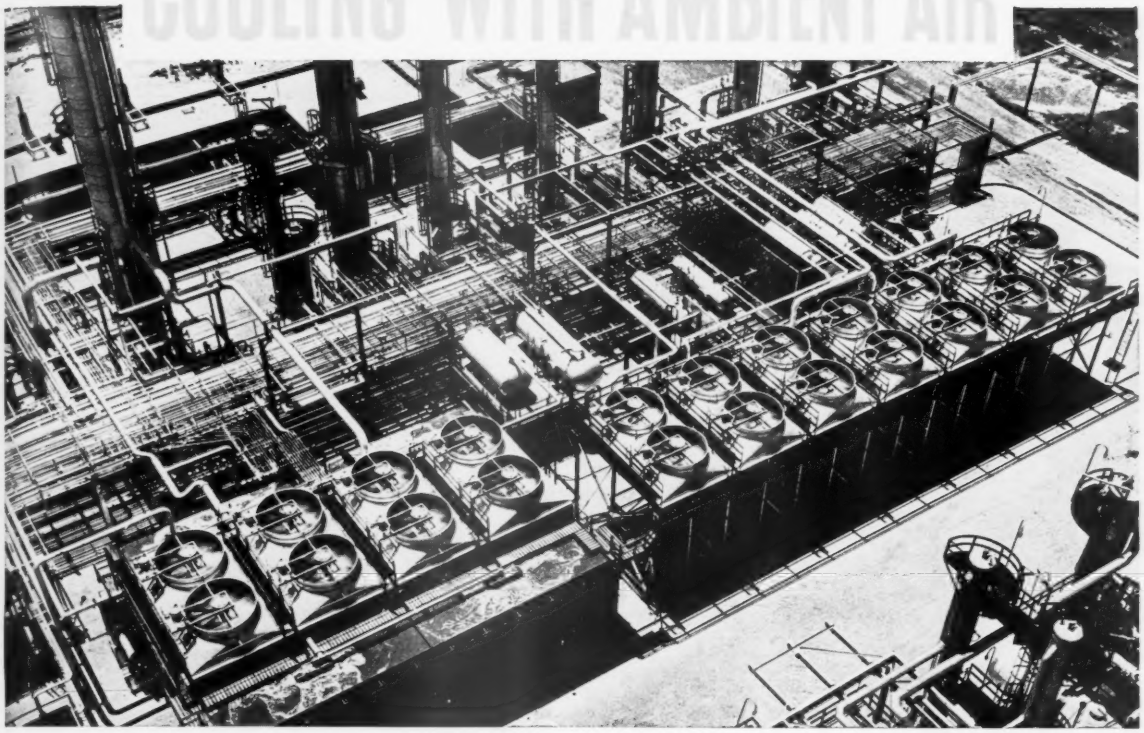

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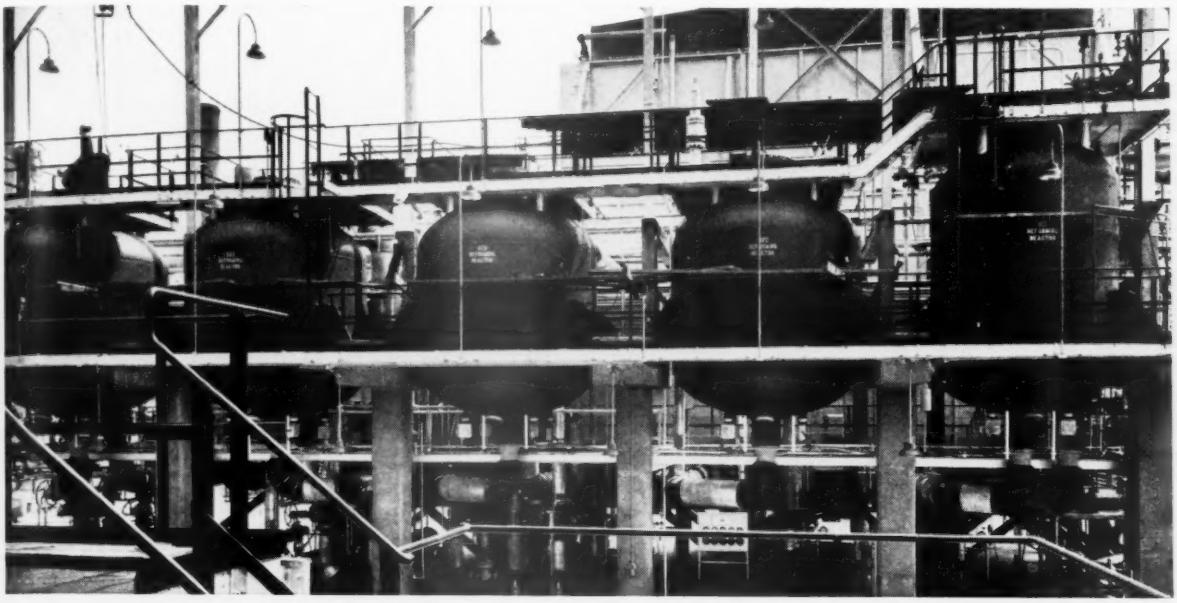
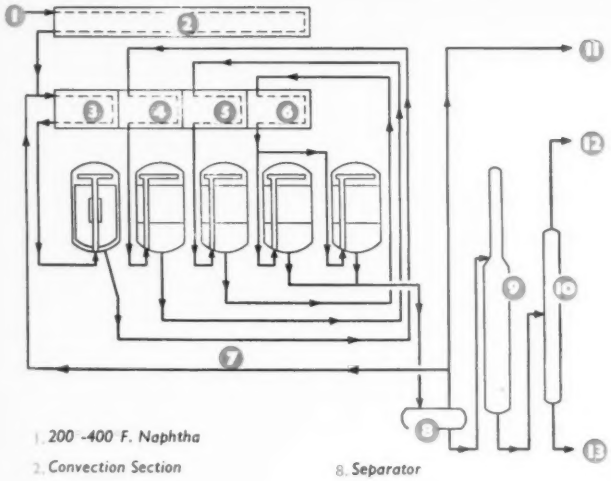


Compact Design Reduces All Costs



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This new compact design of Kellogg Catalytic Reformers achieves an appreciable saving in space, initial cost, operating costs and maintenance expense. Designing the reactors to accommodate both inlet and outlet lines at the bottom is a major factor contributing to this compact functional configuration. The elimination of piping above the reactors results in construction savings and simplifies maintenance.

The most ingenious mechanical innovation in the reforming section is the reactor-furnace layout. The row of five reactors and the four-cell combination furnace are parallel and separated by a space of not more than 10ft. This compact arrangement, coupled with several somewhat uncommon features in both the reactors and the furnace, made possible a considerable saving in investment.

Using Sinclair-Baker-Kellogg catalyst RD-150, the Kellogg reformer can continuously produce a 100 CFR-R clear octane reformate. Leading refiners in England, Europe, North America and South America have made Kellogg reforming units part of their expansion and modernization plans. Kellogg engineers welcome the opportunity to demonstrate the superiority of this catalytic reformer and the SBK catalyst RD-150 to refiners everywhere.

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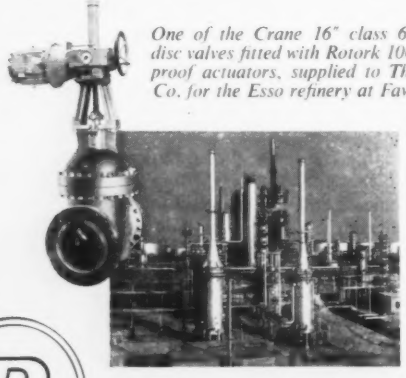
A booklet covering all aspects of Rotork valve control is available to all pipework planners on request.



One of the Crane 16" class 600 flexible disc valves fitted with Rotork 100AS flameproof actuators, supplied to The Lummas Co. for the Esso refinery at Fawley.

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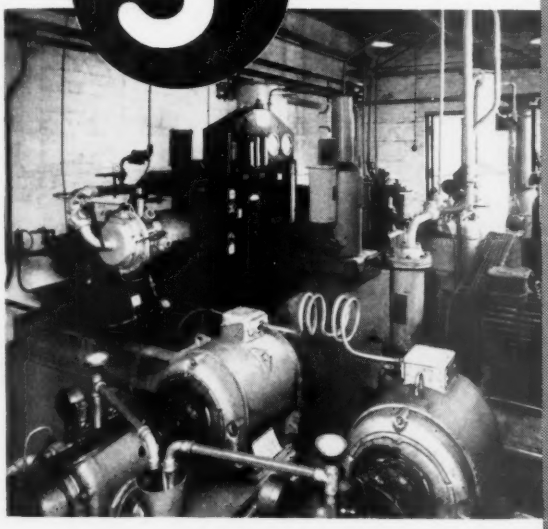

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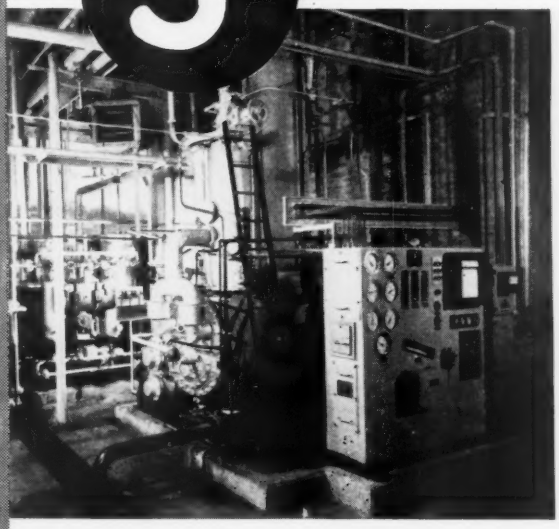

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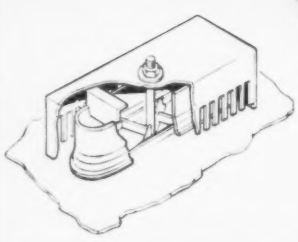

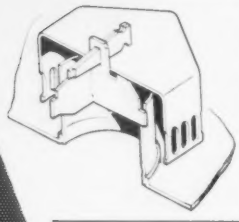

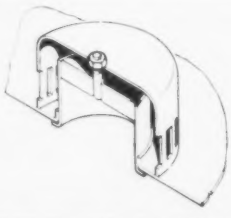

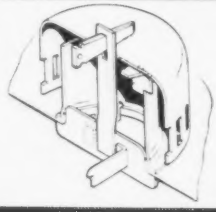

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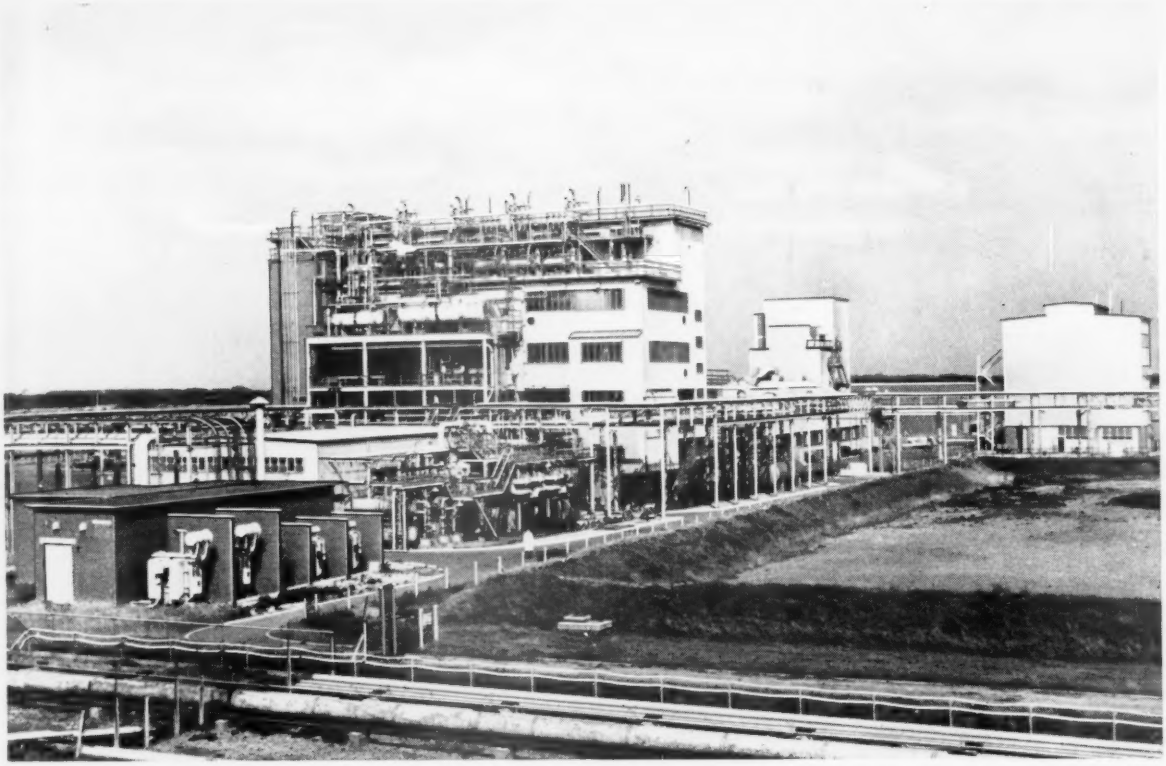

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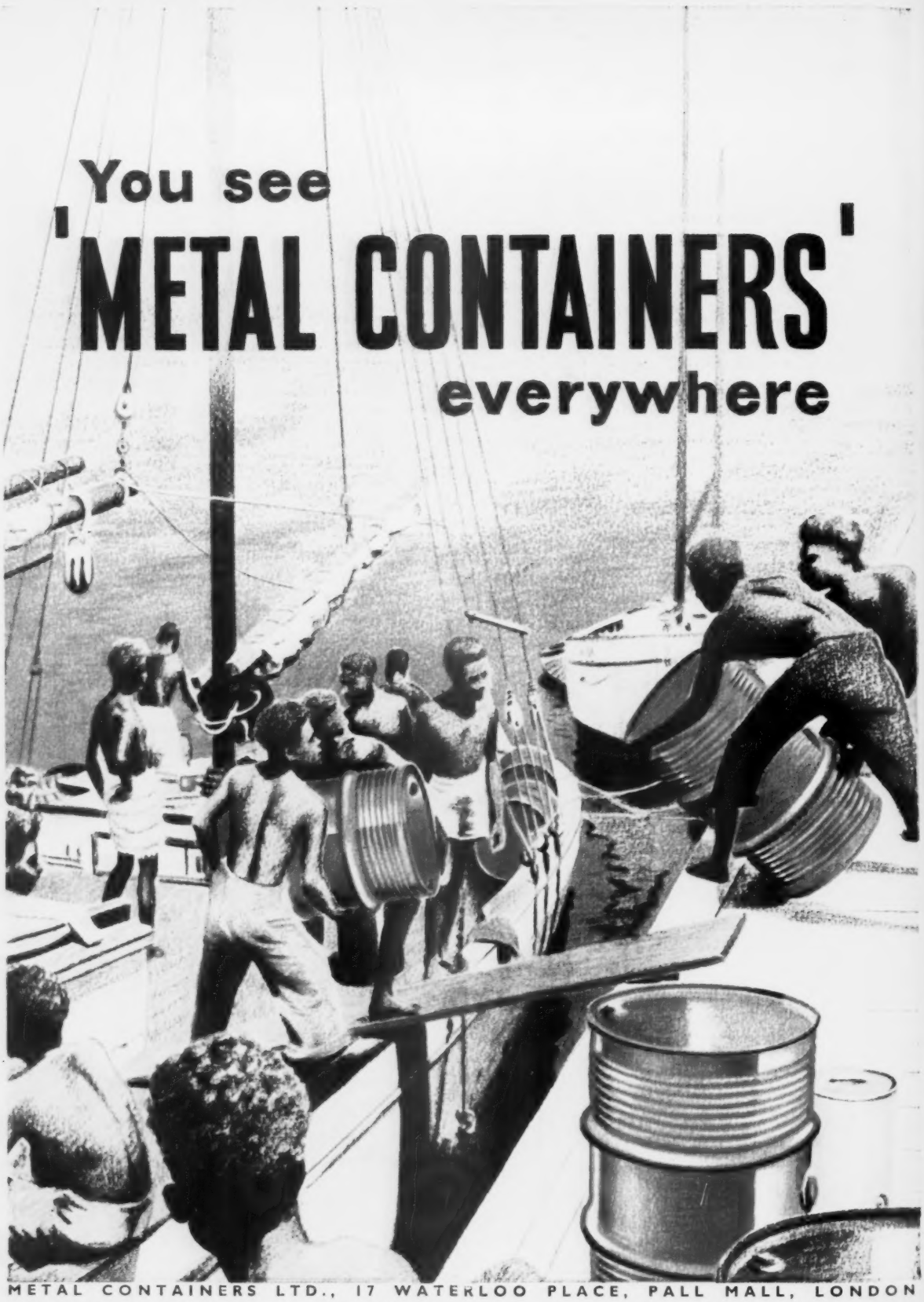

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